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BEEKeeping ^{Spring '19}

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Get Yours Ready For Spring Swarms



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BEEKeeping

Your First Three Years

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The Editor's Hive



Kim Flottum

GETTING STARTED. WHAT YOU NEED AND NEED TO KNOW.

This is a crash course in getting started with your brand new beehive, brand new bees and brand new everything this Spring. It's going to go fast, and I'll skip some of the details. So, find a mentor, or better, work with an experienced beekeeper before you try this alone. Get a good beginner's book (*The Backyard Beekeeper* is good) and read it. And absolutely join your local group and take the beginner's course.

If you haven't already, get bees ordered from a local supplier. Check with your beekeeping group if you don't know a supplier. Call them now to get your order in. Bees are in short supply and sometimes you can't get them. Order one, or better two 3# packages of Italians or Carniolans with a queen. The cost will be around \$150 for each, give or take. From your local supplier, or one of the companies in this magazine get the equipment you'll need. For each package you'll need a hive – I recommend getting what's called 8 frame equipment (10 frame equipment is a bit wider and heavier) – screened or solid (best) bottom board (the floor), brood nest box(es) (2, 10 frame deeps or 3, 8 frame medium boxes) and frames to fit (where the bees live and raise their young), 3 medium honey supers with frames (where they store their food, above the brood nest), inner cover, and cover. You can get the honey supers later. And you'll need some kind of feeder. A pail, jars or top feeder all work, but you must have one. You should also have protein supplement ready when you install the bees. If you have the time and tools, you can get almost all of these unassembled and put them together yourself. You'll save some money,

but it'll take a lot of time. My advice, always, is buy assembled boxes and assembled wooden frames with plastic foundation with beeswax already applied to make life easy. A couple coats of paint on everything that's on the outside and your hive is ready for bees.

You'll need a medium or large smoker and fuel, a regular hive tool, and protective gear. For gear, start with a full suit or jacket that you feel safe in. Doesn't need to be bullet proof, but if you don't feel safe you won't work your bees. Make sure it has a zipper-on veil. They work. Get two pairs of gloves. One, the thinnest gloves you can find. Heavy-duty leather gloves are clumsy and awkward. If you can't pick up a quarter with your gloves on they are too heavy duty for ordinary bee work. You will need thicker gloves, maybe, if you do a lot of moving your hives, or work them when the weather isn't friendly.

Smoker fuel can be burlap or compressed cotton fiber you buy from a supplier, untreated mulch chips, rotten wood from stumps, or long pine needles – the best fuel there is. Before you get bees, practice with your smoker. To light a smoker, use a crumpled half sheet of newspaper, light it, drop into the bottom of the smoker, pump a few times to get it going, drop in a tiny amount of fuel, pump, more fuel, pump, more fuel and you should have

a good fire going, more fuel, more, pumping all the time until the fire is covered in fuel and smoking heavily. Make a fist and pack the fuel down so the smoker is about half full and solid. Close the top. Pump, pump, wait. Pump again. Your smoker should now burn for at least a half hour without going out. If not, you didn't do it right and try again until you get it right. Nothing on earth is more frustrating, or dangerous than having an open hive, and no smoke. Practice makes perfect.

Get a solid hive stand located so it's not close to your property line, in as much sun as possible, with a screen between it both your neighbors and the street if possible. Nervous neighbors and mischievous kids can be a problem if you are in town. Three cement blocks and 6', 2" x 4"s work well. Make it level, and it will easily hold 3 colonies, but only use it for 2, so you always have a place to set the cover and boxes when examining the colony.

So, bee day. Hive ready, equipment ready, beesuit ready, smoker and hive tool ready, time to go get the bees. So how do you and the kids and a package of bees get



Have everything ready before you begin. Bees. Boxes. Rubber bands. Feeders and tools. Remove several frames for a space for the bees.



Thump the package, remove the cover, remove the queen and the feed can inside. Replace the cover.



Remove the cover and slowly pour the bees into the hive. Put the package in front of the hive for the loose bees.




Fasten the queen to a frame near the top, slowly replace the frames, letting them settle rather than push them in.

home? The Package may be perfect and no loose bees come along, and it may not. Don't put it in the trunk, but bring a bag or net so that you can cover or contain the package so loose bees don't get out. Some suppliers make a bag just for this. Make sure it's loose and there's good ventilation, because a bee in your hair at 60 miles per hour can be distracting. But overheated bees will die before you get home.

The photos on the bottom show the basics of installing your package once you get home, but before installation make sure they are well fed and safe. If the weather isn't cooperating, use a new spray bottle to mist 1:1 sugar syrup on the package. This gives them ample food, and something to do, but you should get them installed ASAP.

If you get one of the new plastic packages they are made so that one end swings open and you can remove the bees from that outlet. You can leave the feeder can in place. If you get one of the older models, like the one shown below, you will shake the bees out of the hole on the top that holds the feeder can. For this one, you must remove the can cover, remove the can and queen and then replace the cover until ready.

First, make your hives ready. Remove 5 or 6 frames from the middle. If new frames have rubber bands ready to hold the queen cage. Lift the package, thump it down so all the bees go to the bottom, remove the can cover, remove the can and the queen cage, replace the cover. Put the queen in your pocket. Remove the cover, slowly pour the bees into the hole in your hive. Shake a bit, but don't worry about getting them all. Put the package in front of the hive. Fasten the queen cage to a frame with the bands, slowly replace the frames, put the feeder and protein on top of the frames and cover with your extra boxes. Cover and you're done. It's that easy. 

Kim Steffen



Add a feeder on top of the frames with a protein patty next to it, not on top of the queen, fill with extra frames, cover and you're done.

1ST YEAR HIVE TASKS



Ann Harman

If your colony was started from a package of bees, do not plan on a honey harvest this year. First year is for colony growth.

If started from a nuc (nucleus colony) you could harvest honey if you have a late honey flow and colony numbers are sufficient.

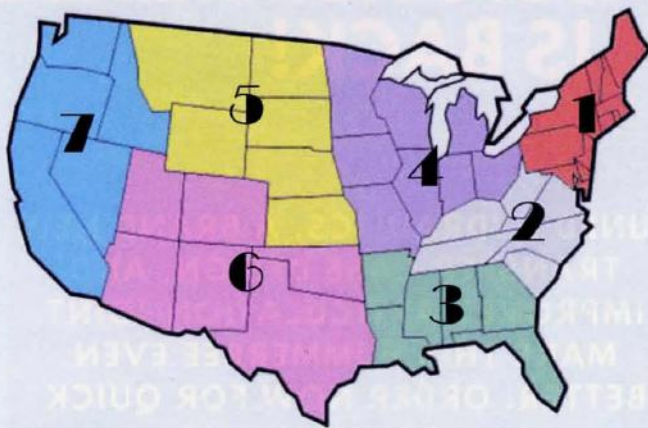
- Start keeping records for each colony.
- Plan inspections to keep time short.
- Make use of days with warm sun, low wind and temperatures above 60°F.
- Encourage bees to draw comb by spraying foundation with 1:1 sugar syrup with Honey-B- Healthy as a stimulant.
- In top bar hives, move follower board to keep up with comb construction.
- In Langstroth hives only add a brood chamber when the first one has 90% drawn comb.
- Food for drawing comb is 1:1 sugar syrup.
- Keep entrances small until colony numbers increase.
- Watch at the entrance for bees returning with pollen.
- If weather is inclement feeding pollen patties may be necessary.
- If in small hive beetle (SHB) territory monitor pollen patties for infestation.
- Look for clues that queen is present—eggs and young larvae.
- A compact brood pattern indicates a good queen.
- Replace queen if she dies or is not laying enough eggs to increase colony numbers.
- Aim for all brood chambers with drawn comb and a large healthy colony by the end of June.
- Bottled sugar water is not honey! Do not put honey supers on when feeding sugar syrup.
- Learn about your bees' foraging area whether rural, suburban or urban.
- Learn seasonal pollen and nectar plants in your area. 

Small Hive Beetle



URGE (the University and Researching Lab)

EARLY SPRING - REGIONAL HONEY PRICE REPORT



What Do You Sell?

Since many of our reporters keep bees to pay for keeping bees, it's instructive to occasionally observe what it is they are selling, because if it works for them it would probably work for you. This is year nine for this survey, and, like the BIP surveys, though the sample size is small and volunteer, enough data over time begins to tell the story. Too, our reporters come and go so the sample size is constantly changing, which occasionally rearranges the data.

The wax business is essentially unchanged, with retail wax blocks easily moving the most wax for beekeepers, slowing sales of less profitable bulk wax. We suspect that when somebody figures out how to process propolis like they do in New Zealand that market will explode,

but for now it remains pretty small. Pollen, as a sale item was down a bit, one hopes because it's staying home and not being sold. Of course honey sells too, but the bump in wholesale honey seems to have tak-

en a bit off retail, chunk, and comb, but crème and stix sales are up.

We noted the continued slide of selling bee supplies. The universe changed this year with big players merging, some exiting the stage and some changing the way they play the game. The internet is a constantly growing force for mom and pop operations that has to be dealt with at the same time.

A few more people are selling

queens, which is good, and nucs and those who pollinate are steady. The almond pollination business is even more serious this year, and prices are showing the value of a strong colony in January. Almond acres are increasing, and the article this month on demand shows that more colonies will be needed every year for some time.

Generally, no surprises. That's a good thing.

	Candles	Ornaments	Wax Blocks	Honey Stix	Pollen	Propolis	Bee Supplies	Packages	Queens	Bulk Wax	Lotions	Soap	Crème Honey	Honey Retail	Comb Honey	Chunk Honey	Nucs	Pollination	Honey, Wholesale
% Reporters Selling 2010	28	17	54	28	28	13	20	9	15	48	20	10	35	90	66	38	28	-	-
2011	39	20	53	39	35	21	21	10	15	42	19	11	35	90	67	40	26	37	-
2012	35	21	53	37	32	15	53	10	22	44	18	13	21	94	62	34	23	32	-
2014	32	12	51	30	31	21	55	17	27	42	25	10	29	93	54	42	29	34	-
2015	30	14	56	28	32	17	40	15	27	40	17	5	30	90	62	38	32	33	-
2016	35	14	62	26	30	16	44	15	26	47	22	14	36	94	55	34	31	33	-
2017	27	13	52	27	25	12	36	13	20	30	22	13	27	83	48	40	28	23	52
2018	36	13	57	29	33	20	31	18	29	53	20	13	23	88	58	32	29	33	59
2019	32	10	61	35	23	17	19	16	30	41	23	21	32	86	53	29	31	32	67

	REPORTING REGIONS							SUMMARY			History	
	1	2	3	4	5	6	7	Range	Avg.	\$/lb	Last Month	Last Year
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS												
55 Gal. Drum, Light	2.28	2.16	2.14	2.34	2.28	2.20	3.00	1.74-3.00	2.20	2.20	2.19	2.27
55 Gal. Drum, Ambr	2.14	2.12	2.01	2.33	2.14	2.01	3.00	1.35-3.00	2.10	2.10	2.08	2.11
60# Light (retail)	220.89	183.40	194.17	195.25	220.89	194.71	250.00	144.00-325.00	207.28	3.45	195.51	193.95
60# Amber (retail)	215.06	185.62	190.00	185.69	215.06	187.83	210.00	132.00-325.00	201.62	3.36	194.51	196.89
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS												
1/2# 24/case	93.96	75.25	86.96	68.75	93.96	90.00	93.96	57.60-144.00	87.13	7.26	88.23	81.76
1# 24/case	138.67	107.13	124.92	108.47	138.67	139.73	148.20	86.40-211.20	128.55	5.36	121.69	120.98
2# 12/case	124.51	95.08	113.12	101.80	124.51	109.61	114.00	79.20-192.00	113.42	4.73	107.73	107.68
12.oz. Plas. 24/cs	108.85	97.33	96.33	90.00	108.85	106.74	103.20	66.00-172.00	98.71	5.48	94.64	97.69
5# 6/case	132.56	108.50	119.62	120.70	132.56	123.00	132.56	65.00-210.00	127.63	4.25	116.67	124.21
Quarts 12/case	175.59	144.96	133.67	134.40	175.59	159.38	192.00	109.20-280.00	156.57	4.35	149.01	140.58
Pints 12/case	97.75	92.83	75.40	81.00	97.75	88.05	108.00	65.00-140.00	93.00	5.17	93.39	90.93
RETAIL SHELF PRICES												
1/2#	5.39	4.48	4.78	4.25	5.09	5.20	7.00	2.38-9.00	5.09	10.19	4.87	4.65
12 oz. Plastic	6.74	5.33	5.92	5.58	4.66	6.34	5.90	2.89-12.00	6.03	8.04	5.77	5.87
1# Glass/Plastic	8.45	6.76	7.54	6.42	6.89	7.45	8.75	4.50-14.00	7.65	7.65	7.47	7.33
2# Glass/Plastic	13.24	10.58	12.62	11.09	12.99	10.42	15.50	6.89-21.00	12.54	6.27	12.49	12.28
Pint	11.70	9.44	8.57	12.22	10.67	9.89	11.13	6.00-20.00	10.40	6.93	9.71	9.89
Quart	18.99	16.64	15.20	13.88	19.00	18.52	20.86	9.00-32.00	17.48	5.83	17.51	16.91
5# Glass/Plastic	29.09	25.38	34.39	26.50	25.25	27.37	29.09	12.50-48.00	27.92	5.58	26.14	27.54
1# Cream	10.87	8.50	8.00	9.40	11.74	7.25	10.50	5.99-18.00	9.74	9.74	9.24	9.96
1# Cut Comb	13.50	9.33	10.19	10.90	16.00	11.25	14.50	6.00-24.00	12.00	12.00	11.74	10.46
Ross Round	9.34	6.90	9.34	9.00	9.34	10.50	12.49	6.00-13.00	9.18	12.24	9.79	9.44
Wholesale Wax (Lt)	6.99	4.98	5.61	5.90	6.99	6.50	7.75	3.00-12.00	6.47	-	6.12	6.45
Wholesale Wax (Dk)	5.63	4.83	4.26	4.75	5.63	3.17	5.63	2.00-10.00	5.26	-	4.91	5.32
Pollination Fee/Col.	90.13	72.50	72.00	97.50	90.13	92.00	67.50	30.00-160.00	85.25	-	79.95	80.86

New For The Beekeeper –

Honey Bee Hobbyist, The Care and Keeping Of Bees. 2nd Edition. Dr. Norm Gary. Published by CompanionHouse Books. ISBN 978-1620083154. 224 pages. Color. Soft cover. \$19.98.

Coincidences in life are always interesting, and sometimes they can be really interesting. Unless you've been living under a hive stand for the last month or so, you've heard about the passing of Stan Lee, the guy who made all kinds of movies, and TV shows, about scary things and super people – Spider Man, The Avengers, Ant Man and lots more, and his TV show, Super Humans.

The TV show, which was on for four seasons, had people who got bit by snakes, swam underwater for way too long, took sledgehammer blows to the head, and could summon and be covered by – Bees. And Dr. Norm Gary was the bee guy, and, he told me, it was going to be the last time he was going to do a wholebody bee beard, and I should come out to the Bee Lab in Davis and watch. So I did.

The first day, he did the wholebody beard, covered head to almost foot for the camera. But something interesting happened the second day. The producer wanted a real close-up of a bee stinging somebody, with the venom sac pulsating and all the horror and pain that goes with it. Norm got a bee and laid his finger down on top of a hive with the camera about an inch away and held the bee with a tweezers so she would sting him. She did, and Norm's finger swelled up like you wouldn't believe. Really.

So, he needed a volunteer to be in his place. There were about 12 or 15 of us watching, all beekeepers, and when he looked up, everybody but me took a step back – and I was the volunteer.

So my finger and a stinging bee got to be on Stan Lee's TV Show, Super Humans. He got it about right.

And last month as I was remembering Stan Lee and his cameo appearances in his movies, and interviews over the years, I was recalling that day in Davis, when in the mail

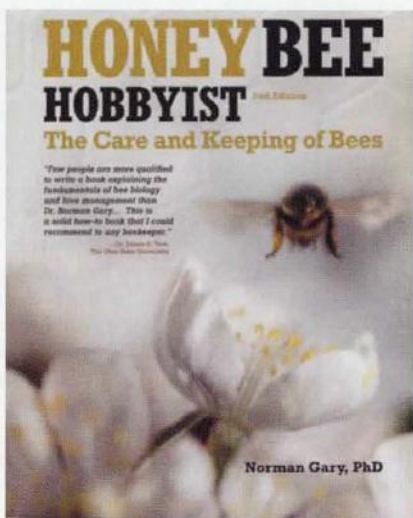
comes Norm's new book, the second edition. Like I said, interesting coincidences . . .

If you have a copy of his first edition you have a feel for photos and chapters, but this edition has a few extras, and some fun chapters. The basics are the basics, and over 50 years of keeping bees taught Norm the basics, including fundamental biology, colony management, honey and hive products. But, Entertaining with bees is something you don't often see, and should. Indoor and outdoor observation hives, and how to do a bee beard are examples of subjects most, probably no beginner's beekeeping book is going to have.

A good glossary and resources list round out the book, and all in all, a book every beginner should be aware of.

And Norm, thanks for my two minutes of fame, and pain.

Kim Flottum

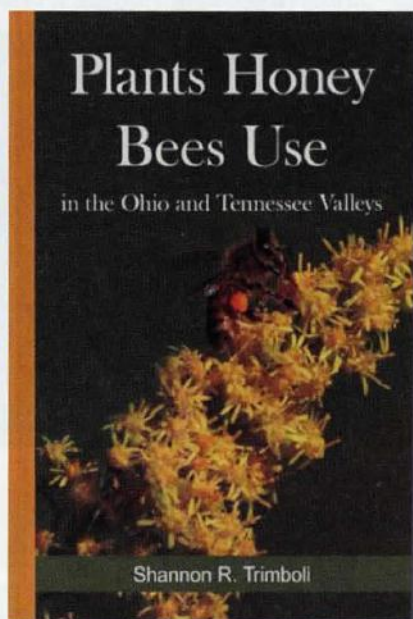


Plants Honey Bees Use in the Ohio and Tennessee Valleys, by Shannon Trimboli. Published by Solidago Press. ISBN 978-0-9996321-0-9. 6" x 9", 301 pages, color throughout

This is the first book to focus on the plants used by honey bees in the states containing the Ohio and Tennessee Valleys (AL, GA, IL, IN, KY, MS, NC, OH, PA, TN, VA, WV). This book was written as a guide for any-

one who is interested in honey bees. Written by a beekeeper and wildlife biologist, *Plants Honey Bees Use in the Ohio and Tennessee Valleys* contains full color pictures and descriptions of over 175 plants, one plant per page with a photo, organized by when they bloom. Also included are chapters about honey bees and their plight, honey bee foraging behavior, factors that influence nectar and pollen production throughout a plant's range, and planting for honey bees. Whether you are a beekeeper who wants to know what flowers your bees are visiting, or a homeowner who wants to know what you can plant for honey bees, this book is for you. But all things considered, the numerous maps that show everything written about and the appendices are what make this book. Plants grouped by family, by common name and then scientific name, Ecoregions for each of the states listed, and a list of invasive species and noxious weeds by state, plus an excellent list of references and web sites round out this very useful resource.

This book actually came out several months ago, and in a very unusual twist of fate, we were mailed, and we actually misplaced two review copies. I finally purchased one on Amazon so I could share this with you, and I still can't find the lost copies. But, it was worth the replacement price. And if you live east of the Mississippi river, you need this book. – Kim Flottum



New For The New Year –

ZipNetBags.com has a new beekeepers' product – a MADE-IN-THE-USA 36"X26" double layered 100% polyester tulle net fabric bag with a 36" zipper for transporting bee nucs inside a vehicle. The bags may also be helpful when collecting a swarm.

Obviously, the purpose of the bag is to prevent bee strings. Should any bees get out of the box, they'll be contained in the net bag. Of course, no one expects to have a wreck or will probably have a wreck when transporting bees, but there are other ways for bees to get out of nuc boxes. For instance, baby bees can often get out of the air holes in some nuc boxes. Depending on the age of the nuc box, other gaps or openings are possible that could allow release of bees inside a vehicle.

Encourage those transporting bees in a sedan-type vehicle to contain bees in these unique fabric bags which ensure the bees have plenty of fresh air while containing the bees and their stingers inside the bag.

Wholesale and volume prices are available. Price of 1-24 bags is \$12.95 each + shipping. 25 to 99 bags are \$10 each + shipping. 100 or more bags are \$9.50 each + shipping. Suppliers might consider renting or leasing the bag by crediting an account when the bag is returned. Of course, the bag is very light and very foldable for easy return mailing.

ZipNetBags.com – check it out!



Honey Bee Health Coalition releases two new resources to help beekeepers make informed hive management decisions:

- a best management practices guide for hive health and
- a decision support tool for taking on the honey bee's most dangerous parasite.

Learn About Beekeeping Best Practices

An expert team of beekeepers, entomologists, extension and regulatory agents, bee suppliers and apiary inspectors produced and reviewed Best Management Practices for Hive Health: A Guide for Beekeepers, which is available for free download.

"The guide includes information about safety considerations, apiary setup and maintenance, pesticide exposure, pests and diseases, queens and nutrition," said Dewey Caron, University of Delaware emeritus professor of entomology and wildlife ecology, Oregon State University affiliate professor, and the guide's lead author. "These best management practices will be updated periodically to ensure beekeepers have access to the best possible resources and strategies."

American Honey Producers Association vice president Chris Hiatt praised the guide.

"Learning and understanding these techniques is vital for beekeepers, and there is a lot of questionable information out there that's not based on the latest best practices," Hiatt said. "The guide both promotes in-hive practices that strengthen bee populations and encourages beekeepers to communicate and work with farmers and landowners to improve bee health. The guide and other Coalition tools help beekeepers get their mite levels under control, which in turn helps neighboring beeyards by reducing mite drift."

Kentucky state apiarist Tammy Horn Potter said, "There is a saying in the beekeeping world: you'll be a be-

ginner for 20 years. However, these best management practices can shorten that learning curve exponentially. The guide helps all beekeepers – from hobbyist to commercial – establish and maintain the conditions necessary for healthy hives. It is full of photos and graphics, and each chapter is followed by a summary of 'Key Points to Remember' as well as resources should beekeepers seek more information."

Explore the Varroa Management Decision Tool

The Coalition also launched a free, mobile-friendly tool to accompany its *Tools for Varroa Management guide*. The *Varroa* guide, first released in 2015 and now in its seventh edition, helps beekeepers implement practical techniques to control the *Varroa* mite, one of the honey bee's most destructive pests.

"The *Varroa* guide is downloaded thousands of times every month, but in talking to beekeepers, we find many are still confused about which treatments are right for their situation and conditions," said Mary Reed, Texas Apiary Inspection Service chief apiary inspector. "With this new tool, they can input their hive conditions and management preferences and receive a list of techniques and treatment options that fit. They can then study their options using the provided information and videos before making a decision."

Reed joined James Wilkes, HiveTracks CEO and chief science and technology officer, to help the Coalition develop the tool.

"The tool guides beekeepers through five questions to determine relevant treatment options and provides information they need if they don't know the answers," Wilkes said. "As the beekeeping community moves toward the best practice of regularly monitoring and managing *Varroa*, this tool will help all beekeepers make wise treatment choices."



**HONEY BEE
HEALTH
COALITION**

EQUIPMENT

CHOOSING THE RIGHT SIZE IS IMPORTANT

David McFawn



Choosing your equipment size is the utmost importance. As a beekeeper you can select 10-frame or eight-frame, in deeps, medium, and shallow depths. Top Bar Hives (TBH) may also be considered. Care needs to be taken when assembling equipment. The correct size nails need to be used and the super assembled with the correct handhold orientation. Woodenware should be primed with a high-quality primer and two coats of a high-quality paint. Currently, only smooth planed inside equipment is available and not the more recently recommended rough surface. Rough inside surfaces are desirable to increase the bees' propolis coating¹.

Ten frame Langstroth equipment is the traditional standard. It allows the most space which minimizes swarming and is economical. However, it is heavy to lift and the most difficult to get your arms around. Ten frame equipment also requires more frame manipulation. Eight frame equipment is easier to lift and handle, is lighter in weight, and the bees seem to do better since bees tend to move up. However, the bees tend to swarm more in eight frame equipment.

The depth of the equipment selected depends on your preference. Some beekeepers use all deeps. With deeps weight is of concern but all frames are interchangeable. An alternative is to use all mediums, which is about two-thirds the weight of a deep, and again all the frames are interchangeable. Also, a lot of beekeepers use a deep brood chamber and a medium feed chamber and supers. The size of your feed chamber and super hive bodies should match your area's nectar flow and overwintering store requirements.

	Deep	Medium	Shallow	Depth	Dimensions
	Weight	Weight	Weight	Deep, Med.,	Shallow
10 frame	80	50	40	9 ⁵ / ₈ , 6 ⁵ / ₈ , 5 ¹¹ / ₁₆	
8 frame	64	40	32	9 ⁵ / ₈ , 6 ⁵ / ₈ , 5 ¹¹ / ₁₆	



Figure 1

Standard Langstroth equipment has outside dimensions of 19-⁷/₈" x 16¹/₄" (some manufactures are 19³/₄" x 16¹/₈"). This means the outside dimensions of different manufacturer's equipment will generally fit due to the boards nominal thickness (³/₄"). Different manufacturer's equipment depth may be different by ¹/₈"

or less. This depth difference may result in the interior bee space being violated from the top of the frame top bars to the bottom bar of the super above. The same bee space issue can occur between the uppermost hive body and the inner cover/migratory cover. If you are purchasing equipment (deeps, medium, shallows) from different manufacturers, you need to assess the equipment's depth differences. If the space between super frames of different manufacturers equipment is greater than ³/₈" (9.53 mm), burr comb may be built. If the space is less than



Figure 2

¹/₄" (6.4 mm), the space may be propolized shut (Figure 1).

Note the burr comb on the top bars in Figure 1. This means the bee space (¹/₄" to ³/₈") has been violated between the top of the top bars in the below super and the bottom bars in the above super. Burr comb sometimes makes it difficult to separate the two supers. Spacing violations may also allow a place for Small Hive Beetles to hide. Often burr comb is drone comb which may allow *Varroa* mite reservoirs.

Many beekeepers use nine frame spacers in their honey supers, Figure 2. Nine frame spacers result in the bees drawing-out the comb past the edge of the frame's top bars. This allows easy uncapping of the honey comb.

Some beekeepers believe frame spacers, Figure 2, are an area Small Hive Beetles may hide. That has not been my experience with the bees propolis the empty space around the frames ledges.

Frames should be glued and nailed together with high quality waterproof glue so they will not come apart under heavy prying. The beekeeper can use a sheet of beeswax foundation in their frames, or a two-inch beeswax foundation strip to promote the bees drawing out the comb with the natural 14% to 17% drone cells. Of course, plastic foundation can be use but at least a double beeswax coat is preferred resulting in the bees accepting the plastic foundation easier.

7d (2.25 in. 5.715 cm.) galvanized nail for nailing hive bodies and supers.

4d (1.50 in. 3.810 cm.) galvanized nail for bottom boards
1¹/₄" (3.175 cm) x 17-gauge nail for nailing frame top bars to end bars or to attach top bars and bottom bars to end bars.

³/₄" (1.91 cm) x 18-gauge nail can be used for bottom bars or end bars, recommended for wedges or



Figure 3

under the frame ear going from the end bar into the top bar.
 $\frac{5}{8}$ " Nails (1.59 cm) Used to attach the wedge back to the top bar or with frame spacers.

All hive body joints should be glued with high quality waterproof glue and nailed. Gluing the joints helps ensure a tight, waterproof joint. The

wooden fingers where the nails are placed should be drilled with the hole slightly smaller than the nail shank diameter. Drilling a hole will keep the wood from splitting. Most manufacturers pre-drill the holes. All woodenware should be primed with a high-quality primer and painted with at least two coats of a high-quality paint.

Only the outer surfaces should be painted; the inside surfaces should not be painted since the bees will coat the inside surfaces with propolis. In the high humidity southeast properly, painted woodenware should last eight to ten years before needing repainting.



Figure 4

In Figure 3, note the drilled pilot holes which aids in preventing the wood from splitting. Also, note the handhold orientation. When assembling, the assembler needs to ensure the handholds are oriented correct and the side is not upside down with respect to the other sides. If an end side is upside down, the frame rest ledge will be on the box's bottom rather than the top.

In Figure 4 and Figure 5, note the glue on the joints of the super. Glue should be applied to joints on both pieces prior to assembly. If too much glue is applied it will run out onto the super surface. You can certainly wipe the excess glue with a cloth or leave it on the surface to dry. Also, note again the handhold orientation. Some beekeepers use screws. Screws are better than nails but usually a combination of nails and glue is sufficient.

Attaching a $\frac{3}{4}$ " x about 6" board (a cleat) just above the handhold will increase the surface lifting area (Figure 6). This additional lifting surface helps immensely with finger-tip comfort and being able to lift a heavy super. The downside is the hives take more room in a truck when moving. Hence, the trade-off is between comfort/ lifting weight, and being able to fit more hives in a truck.

Bottom boards, inner covers, and telescoping outer covers usually come assembled. Migratory



Figure 5

covers usually come unassembled and should be glued with a high-quality water proof glue and nailed. After assembly, the outer surfaces should be primed and painted. The inner surface next to the hive equipment stack should not be painted for moisture control assistance and for the bees to coat with propolis.

I use nine frame spacers in honey supers

and no spacers in brood chambers. Hence, this results in 10 frames in my brood chamber and nine frames in honey supers. The honey super frame rests and corners are painted prior to assembling nine frame spacers.

For Top Bar Hives, the reader is referred to Dr. Wyatt Mangum's book, "Top-Bar Hive Beekeeping: Wisdom & Pleasure Combined," ISBN 978-0-9851284-0-1, Singing Drone Publications. Bowling Green, Virginia.

In summary, correct assembly and care of hive



Figure 6

equipment will ensure your woodenware lasts a lifetime. Woodenware rather than plastic or other material is preferred since it "breathes" and is more in line with what the bees encounter in the wild. The woodenware should be glued and nailed with the correct size nail, primed and painted on the outside. It should not be painted on the inside since the bees will

apply a propolis coat.

Properly assembled and painted woodenware will last eight to ten years prior to repainting in the Southeast.



Figure 9

[easternapiculture.org/images/stories/extensions/DarwinianBeekeeping-EAS17.pdf](https://www.easternapiculture.org/images/stories/extensions/DarwinianBeekeeping-EAS17.pdf)



1 Environment of Evolutionary Adaptedness (EEA) at Eastern Apiculture Society (EAS). <https://www.easternapiculture.org>

Honey Pots

Honey Containers Can Both Preserve Or Induce Spoilage



Robert Weast

Why is there an interest in collecting ancient honey pots? A prime reason may be the historical connection, touching base with a bygone era. Archeologists have uncovered entire ancient villages, revealing a treasure trove of valuable artifacts. Honey containers found in the diggings would be priceless and sought after by collectors. Holding, viewing, and touching an ancient honey pot personalizes and produces an intimate connection to times past. One might enjoy collecting contemporary honey pots because they may be nostalgic, recalling an event in one's life, be it a serendipitous, pleasant experience, or a calamitous, unpleasant occurrence.

Every conceivable shape of container or dispenser imaginable has stored honey during the past several millennia beginning with primitive harvesters made by honey robbers who cut combs from wild colonies. Presumably they protected their harvest as best they could from vermin, which must have taken some ingenuity. Today, containers range from large storage tanks to earthen, clay vessels, from plain and glazed pottery to glassware, not to mention the ubiquitous handy plastic honey bear dispensers. Honey pots have become collectibles and occur in an infinite variety of styles. Some rise to icon status, works of artistry; from the potter's wheel and adorned by skilled hands. These gems are ornate and are admired for their beauty, not necessarily used for dispensing honey.

The most primitive honey holders I have seen were at trinket, souvenir and fruit stands in Kenya. On an African safari our bus stopped at roadside stands in villages, where small slabs of comb drenched in liquid honey were sold in any sort of makeshift take-home containers. The imagination and adaptability of local beekeepers kept package expenses down to a bare minimum, or even zero. They recycled what they had on hand. Coke bottles are commonly repurposed for liquid honey.

It is well known that honey seems to be imperishable when sealed and protected from moisture. The most famous example of preserved honey dates back 3,000 years to ancient Egypt. In 1922 the tomb of King Tutankhamun, simply known as King Tut, was unearthed from the sand in Egypt's Valley of the Kings. Among priceless jewels and gold was a cache of honey, still edible and delicious after three millennia. A most remarkable discovery!

Ancient Egyptians used honey as an antiseptic ointment. Because honey is extremely acidic and devoid of moisture, bacteria and other organisms are prevented from growing, making honey an efficient, and ancient

remedy to help prevent infections of flesh wounds. In addition, when bees regurgitate nectar, the enzyme glucose oxidase is present, which breaks down into minute amounts of hydrogen peroxide when diluted by wound exudates. This continuous production of hydrogen peroxide fights infections. Even today, manuka honey from New Zealand is noted for its elevated levels of heat stable methylglyoxal with its high antibacterial activity against *E. coli* and *S. aureum*. Manuka honey fetches a premium price, depending on its activity level. In my local store it ranges from a low of \$38 up to \$114 for 8.8 oz.

Honey spoilage is traceable to moisture. Honey is hygroscopic, that is, it attracts and absorbs moisture; hence, naturally occurring yeasts can consume the sugars, producing alcohol that cause the honey to ferment. Uncovered honey is a recipe for eventual spoilage, especially during periods of high temperatures coupled with high humidity. Another prescription for spoilage occurs when high water-laden nectar is deposited in the comb. Typically, bees will fan air over these combs to remove the excess moisture. Should the bees vacate the unsealed comb before this moisture is removed, fermentation can set in. This phenomenon also occurs when beekeepers store unripe, uncapped honey in combs.

Typically honey bees preserve their cured honey by covering the comb cells with wax. Sealing the combs has two purposes: It prevents honey from dripping out and thwarts ants and other vermin from feasting on the hard earned treasure.

Whatever the type of prolonged honey storage used, the cardinal rule is that the container must be perfectly sealed from outside, ambient air. Honey pots, when used as short term dispensers of honey, are fine because consumption ensures that they are periodically emptied of their golden and amber tasty contents.

Sources for honey pots can be just about anywhere, from antique shops, garage sales, flea markets to on-line, where dozens are for sale. If you're interested in collecting them, always keep your eyes open. Contemporary honey pots are reasonably price, but old or ancient honey pots are rare and command a premium price. Now, where shall I store my latest acquisition...



Skilled Polish artisans have hand crafted this contemporary iconic stoneware honey pot and have adorned it using fine brushwork, hand painting it with honey bee motifs.



Bee Yard

IT'S ALL ABOUT, LOCATION LOCATION, LOCATION

Daniel Thurston

QUESTION: I'm making splits and increasing my colony numbers this bee season. I'm at the point where I'd like to set up a new beeyard. How do I go about doing so? What should I look for in a yard location?

ANSWER: Making splits is a great way to increase your colony numbers. Moving splits away from their original hive location will help avoid returning drift. When you have made a new split from hives in the same yard, those bees will have a tendency to return to their original hive rather than the new brood box you've provided. Screening the entrance of your split for 24 hours, or moving the colony to a new yard location, will help ensure its acceptance and success.

Preparing any new yard you intend to move bees into in advance will benefit you when you move colonies. Organizing your hive stands / pallets and erecting your bear fence, if required, will prevent running around in the dark the night you move bees.

Depending on your area, finding a new location for your hives can sometimes be challenging. Bees can be kept on your own property or on land belonging to others. It is standard practice to compensate the landowner with honey as a thank you for the use of their property. As a general rule beekeepers, provide one pound of honey per colony to property owners.

Speaking to family, friends, and other beekeepers can help you secure a location for your hives. In

some circumstances, people will be looking for someone to keep bees on their property and have approached a beekeeper that didn't need any additional yards. Similarly you may have friends and family who are looking for bees on their own property, or have told others you keep bees, and discovered people interested in hosting you. Using online/newspaper classifieds and going door to door can also assist in securing a new yard location.

There are a number of factors to consider when selecting a beeyard location. These factors will ensure both you and your bees are kept content.



FORAGE

Forage is an important consideration when choosing a yard as bees rely on pollen and nectar for survival. Although placing your colonies next to a high-yielding crop is ideal for honey production, this proximity is not necessarily required. Bees usually forage within a two-mile radius and will find forage areas even if you don't make them immediately available. Bees require forage all season long, from Spring through Fall. Ensuring they have access to a variety of flowering plants will ensure pollen and nectar

are available to your colonies throughout the season.

WATER

Water access is important for bees, as water is used to regulate colony temperature, dissolve honey and taking a drink. Unlike other beekeeping climates, there are plenty of natural water resources in Ontario where I am to support honey bee colonies. As a result, supplemental water sources generally do not need to be supplied. Similar to flowering forage, water does not have to be immediately available to your colonies. Issues can arise, however, if your bees begin to visit neighboring pools, hot tubs, and bird baths. Early in the season, providing a small pool or tub of water in your yard with floating debris to prevent drowning can help encourage your bees to avoid visiting neighboring water sources. You may want to give it an odor at the beginning – Honey B Healthy, or a food flavoring, or even water from a pond. Be cautious of water sources that may be contaminated or harmful to bees.

WIND PROTECTION

Exposure to wind can be both beneficial and detrimental to honey bee colonies. A light breeze can be beneficial in helping cool the colony and ventilate moisture, as well as keeping the beekeeper cool while working colonies. During the Winter months, cold winds can chill the colony. When planning or scouting a yard location, note the location of wind breaks in the form of trees and bushes. Coniferous trees are to provide more wind protection during the Winter than deciduous trees. Furthermore, some form of fence or snow fence, as well as wrapping colonies for Winter, will help protect them from chilling winds and encourage snow cover that will provide additional insulation.

SUN EXPOSURE

To maximize sun exposure, colonies should ideally be placed facing south, going southeast. Capturing sun exposure early and throughout the day will encourage foraging. Heavily shaded places are not ideal beeyard locations. And the sun is not at the same angle all season. Your colony may be in full sun Spring and Summer, but shade in Fall and Winter. Look for a location that is sunny on Christmas Day and you'll be OK.

SURROUNDINGS

Being aware of your surroundings when selecting a new beeyard can mean more than considering surrounding forage. Neighboring facilities may produce noises, odors, or substances harmful or unpleasant to you and your bees. Vandalism and theft are also, unfortunately, something to keep in mind when selecting a location. Avoid placing your colonies too close to areas of heavy traffic and observation.

Ontario is a big province, with a lot of southern density. There are approximately 3,100 beekeepers registered in the province, not to mention those outside the registry. With that in mind, selecting a location to keep your bees might involve investigating your proximity to other beekeepers and established yards nearby. Livestock and wildlife can also be an influencing factor. Colonies of bees can happily co-exist with livestock, but fences might be necessary to separate them, or to deter predators such as skunks, raccoons, and bears.

Finally, when considering your surroundings, nearby fields and crops can be of concern. Be aware of areas where pesticides may be used or sprayed, and crops that bees may forage or fly to during and after pesticide applications.

SIZE

When scouting for and planning your new yard, size is something to keep in mind. Although you may only be planning to place a couple hives there, down the road you may wish you had room for expansion. Finding a yard with enough space to expand your colony numbers, and to accommodate multiple people working together, will be a benefit in the long run.

ACCESSIBILITY

Ensuring your yard is easily accessible is important to ensure your own productivity. If a yard is difficult to access with your vehicle it won't be as enjoyable to visit – and it certainly won't be conducive to pulling honey or moving equipment in and out. Access throughout the season is important to consider; if you're scouting for yards in June or July, wet patches where you might get stuck in Spring may not be apparent. Consider obstacles as well – having to hop out of your vehicle numerous times to open and shut gates, or slowly maneuver over and around obstacles and rough terrain, can make visiting your new yard a challenge.

HUMAN PESTS

Keeping yourself healthy and happy is also important. Yard locations should be free of obstacles and obstructions you might trip on. Avoiding locations where mosquitoes and black flies are abundant will make your visit to the yard more enjoyable and keep your hands working rather than swatting. Avoiding locations where thorny brush or poison oak/ivy can be found will also keep up morale. Ticks and Lyme disease are receiving increased attention in beeyards as of late. Taking care to mitigate your risk of potential exposure will keep you free of these pests.

LEGALITIES

The Bees Act of Ontario provides provincial guidelines for beeyard specifications related to property lines, roads, and buildings. You can contact your local municipality or region to find out about additional laws and regulations for keeping bees in your area. Within the beekeeping community, there are also unwritten rules related to communication. Notifying neighbors and neighboring beekeepers of your presence in the area, and scouting cooperatively for yard locations, will help keep relations strong and all parties informed of the bees and beekeeping practices taking place around them.



Daniel Thurston is a member of the Ontario Tech Transfer Team. Originally this article was published in the Ontario Beekeepers Newsletter, special edition.

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YEARS 2 & 3 HIVE TASKS

Ann Harman



- Spring Cleaning—top to bottom.
- Choose a nice sunny Spring day, above 60°F with little or no wind for hive inspection.
- Start at the top and continue all the way down including underneath the hive.
- Inspect each hive part and note anything for repair or replacement.
- Select any damaged comb for replacement during a strong nectar flow.
- If using foundation (Langstroth) mist it with 1:1 sugar syrup with Honey-B-Healthy, a stimulant.
- Note the food supply of both pollen and nectar.
- If necessary feed 1:1 sugar syrup and pollen patties.
- In small hive beetle areas, monitor pollen patties where SHB will feed.
- Note queen performance—colony numbers, brood pattern.
- If colony is weak, but free of disease, combine with strong colony or replace queen.
- Kill the queen in the weak colony before combining.
- If any disease suspected, contact local bee inspector or experienced beekeeper.
- Look for swarm signs—drones active, queen cells on bottom bars of frames.
- Learn swarm time in your area and plan your swarm prevention methods.
- If bottom brood chamber is empty, it can become the top one, called reversing.
- Brood chambers can be reversed every seven to ten days until strong nectar flow.
- Never split brood pattern when reversing.
- Honey supers should be ready before nectar flow begins.
- If feeding syrup do not put any honey supers on—stored syrup is not honey.
- Increase or decrease honey supers as necessary, depending on weather.
- Clean up beeyard from any Winter debris.
- If in bear or skunk country, inspect and repair electric fence.
- Learn your Spring nectar and pollen plants and where they are growing.



Hypothetical Honey

Stephen Bishop

At the only stoplight in Polkville, North Carolina, a log truck creeps forward and begins to move through the gears. The payload is 16-foot peeler logs, destined for a mill in Old Fort. Once at the mill, the logs will eventually be loaded onto a large conveyor belt and cut into two smaller eight-foot logs. These small logs will be conveyed to a lathe that spins each log against an eight-foot blade, peeling off a continuous sheet of veneer. These sheets of veneer will be trimmed to 4-foot by 8-foot sections that will be lathered in glue, stacked, and pressed into plywood. The plywood will be shipped to home improvement stores throughout the country.

Years ago, as a forestry student, I had a chance to tour the mill in Old Fort that specializes in producing poplar plywood. Poplar plywood is high-dollar stuff, and that log truck in front of me will provide some landowner with a nice paycheck.

Now as a beekeeper, I value poplar differently than I did as a timber cruiser. Instead of calculating board feet, I sometimes look up into a towering poplar and try to guesstimate the number of blossoms and how those blossoms might affect my honey supers.

By poplar, I should specify here that I'm referring to *Liriodendron tulipifera*, which is a magnolia, not a poplar. But loggers thought the wood was lightweight like poplar, so they started calling it tulip poplar. The name stuck, and most people around here now truncate it to "poplar."

For beekeepers in the foothills of North Carolina, poplar is the main event. Some years, this event lives up to its billing. In other years, it's KO'd in the first round by Mother Nature. Before you realize the trees even bloomed, orange-creme petals are melting away on the ground. In other years despite perfect weather and all indications that the flowers are producing plenty of nectar, the bees seem to prefer bounty from other plants, say blackberry or black locust. But in a good poplar year, which climaxes with a good and utilized poplar bloom, bees can fill supers in a hurry—full of dark honey with a faint reddish tint and a tinge of earthiness, as if the distilled nectar that comprises that honey once originated deep from a headspring guarded by big poplar roots.

In days gone by, when men searched for a headspring, usually to set up shop for another type of distilling, a big poplar or clump of big poplars guarded the spot. Historically, poplars grow best in moist areas, in the rich soils of bottoms and lower slopes along creeks and branches. Their territory has expanded up slope with our penchant for putting out forest fires. Unlike

some hardwoods and oaks, tulip poplars have no fire-resistant adaptations, but can grow incredibly fast and outcompete species in drier areas that depend on fire for a competitive advantage. They are also prolific seed producers, which is good news for beekeepers.

Consider this: researchers determined that a 10-inch diameter tree in North Carolina produced 750 cones and 7,500 viable seeds. A 20-inch diameter tree produced 3,250 cones with 29,000 viable seeds. That is 750 and 3,250 blossoms respectively. So, back to the question: how much are those beautiful blossoms worth in terms of honey production?

Way back in 1933, USDA apiculturist G.E. Marvin was curious about this as well. He set up shop on the branch of a 15-inch poplar in North Carolina. On that branch, he wrapped 32 blossoms in cellophane and periodically swabbed the blossoms with cotton swabs.

He then weighed the swabs and determined that the average poplar blossom produces 1.6417 grams of nectar. He also calculated that the total number of blossoms on that tree was 2,484. He multiplied these numbers together and rounded to 4.1 kg of nectar produced, or 9.02 pounds. This nectar had a water content of 83.3% and to thicken to honey it needs to be 20% or less. So, drum roll please, Mr. Marvin determined that a 15-inch poplar could produce enough nectar for 2.16 pounds of honey—the key word being could.

That 2.16 pounds doesn't seem like a lot, but considering a mature mixed-hardwood forest might have

many dozen big poplars per acre and bees can forage over 1500 acres in their range, the numbers add up and those orange poplar blossoms look like green dollar signs in the sky. The problem with calculating this hypothetical honey yield is that 2.16 pounds is based on the perfect scenario, or the cellophane scenario. Because poplar blooms relatively early in the progression of blooming plants, often hives are not in peak shape to gather all that nectar. And poplar nectar doesn't last long. People have reported the phenomenon of raining nectar during a breeze under poplars. That falling nectar will never darken a honey jar. On hot days, ungathered nectar literally dissipates into the sky.

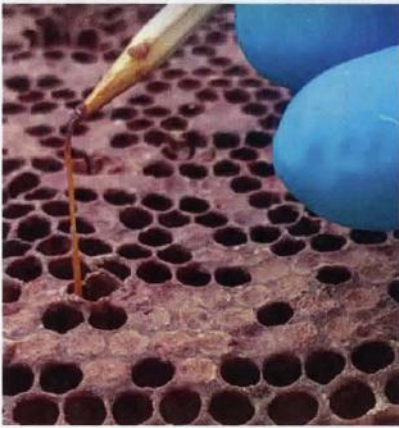
So how much is a poplar worth? That's a good question. I'll still ponder it when I see a log truck full of poplar logs or when I gaze into a canopy of blooms. If I had to answer, I'd probably say a one-pound jar of honey in the hand is worth more than 2.16 pounds of honey in the heavens.



American Foulbrood

Jay Heselschwerdt

American Foulbrood (AFB) is not from America and European Foulbrood (EFB) is not from Europe. It is more about who discovered the AFB and EFB. American scientists found the disease and have classified it as what we know of it today and the same for the European scientists and EFB.



I would like to discuss more about how to keep your bee yard(s) clean and safe from AFB. There are many websites to learn from on the internet. There are also some classes to take on what to look for and that distinct smell of a "chicken house" or dead fish (hence the name "foulbrood"). But, how do you get it and stay away from getting it in your hives? What are the do's and do not's of keeping your honey bees and wooden ware safe from it? Why do some states have so many outbreaks and other do not? So many questions for such a small spore (*paenibacillus larvae*).

So first off let us start at how you get it AFB in your hives. The easiest way is to buy used equipment and the spores are already in the wooden ware. Wood has pores and since we only paint the wood on the outside of the hive, the inside of the hive bodies and frames have countless amount of pores to hide in. Even after the bees treat the inside of the wood the spores since have areas to hide and lay in wait. The AFB spores slide inside the pores of the wood and can

live there for more than 80 years. Even if you wash it, bleach it, run a torch over it, the spores will survive it. The only way to kill the spores is to burn the hive! If the bees are living in the hive then the bees will need to be killed. Use gasoline and make sure the hive is taped up so none of the honey bees can escape. You should wait till night when all the bees have returned for the night before killing them. Then once all the bees are dead, open the hive to air out the gas. Gas is explosive so be careful before lighting the hive on fire. If the gas is still in the hive when you put fire to it, you will launch the hive into the air. I would not think hot wax and honey raining down on you would be a good thing.

Another way to get AFB is when a hive is declining in population due to the hive being sick and the AFB taking hold. The hive weakens and is able to be robbed from other colonies in that area. Those said colonies could be up to three miles away depending on the time of the season and nectar flow. That one hive can now cause several hives to have the spores as the robbing bees take honey and pollen back to their colony. Three miles contains thousands of acres! That can have a lot of beehives within that acreage.

Drifting can also be a problem with spreading of the spores from one hive to another hive in your bee yard. The adult bee can have the spores in their stomach and still live for a while. The bee can even feed the spores to the larvae in the cells. Which will in turn increasing the depopulation of the hive even faster.

Drones are a very social bee and will check out hives within their area. Once inside the hive a worker may feed the hungry drone. Once the drone is fed and happy, he returns home with AFB in his stomach to spread in his colony.

Your hive tool can transport the spores from hive to hive and from yard to yard if you have multiple yards or help other beekeepers. Your smoker and gloves can also transport

the spores. The gloves are in each hive and the propolis (along with the AFB spores) sticks to your gloves and then to the smoker bellows. The smoker is used at each hive and sometimes in multiple yards.

But, the biggest problem of the spores being transferred from one hive to the next is the beekeeper themselves. Everyone is taught to pull frames from the strong hive to place in a weak hive to boost it. Evening out the honey going into Winter by moving frames from hive to the next hive. If a hive dies out just put more bees in it or use that wooden ware somewhere else in the bee yard. It all works fine, until you have AFB then there is trouble.

Ok, so we figured out how the spores are transferred around from one hive to another or many. What can you do to limit the amount of transfer of the spores?



Do not buy used equipment no matter what the sellers will tell you. The seller says "The bees just left the hive". Why would the bees just left





the hive? Or they say "The bees just died". Honey bees just do not die for no reason. Here in Tennessee it is illegal to sell used equipment unless it is boiled in lye water for more than 30 minutes. Then what do you do with the 50 gallons of lye water that was in a barrel large enough to dip one brood box in? That lye water if poured down your sink will eat your pipes and cause a huge plumbing bill. Besides, who has the time to boil each piece for 30 minutes? If you did have the time the wood hive bodies will be useless. You will be able to push your finger though the side of the hive body. It is not worth saving a little money on used equipment if it is killing your bees. Just say "NO" to used equipment.

Robbing can be controlled by not feeding at the hive entrance. Or put the entrance feeder all the way to one side of the hive entrance than close up the center of the hive and leave the entrance for the honey bees on the opposite side. Or a better option is to use hive top feeders. Check your hives before the dearth (dry season) comes to your area and see if you need to feed or not. Do not use the community bucket feeder or as I like to call them the community disease spreaders.

Drifting can be solved by a few different options in the bee yard. Off set your hives so the wind does not push your honey bees towards the next hive. Paying attention to the wind direction will help you with the bee yard set up. Next you can set

up wind blocks between the hives. Another option is to use different shapes on the hive just above the entrance. Honey bees can tell the difference between a circle, square, and triangle for example.

Your hive tool, smoker and gloves can be an easy fix if you have multiple beeyards. Use an outer cover upside down and place a deep hive body in to it. Use another outer cover as a lid and now you have a box to put your hive tool, smoker, and gloves in. Make sure your smoker is out and is not hot before placing into the box for storage. It is cheaper to have a hive tool, smoker and gloves in each bee yard than to burn a hive in each yard because you are not willing to take a little precaution.

If you have one or more bee yards and you see something wrong in the hive then STOP. Do not use the hive tool or smoker in any more hives till you figure out what is going on inside the hive. As far as gloves go, I use the blue nitrile disposable gloves which I can turn inside out and throw away after each inspection. Or if the hive has AFB then the disposable gloves can be burnt with an AFB hive. You can use the leather gloves but they are hard to clean and could still have spores on them after washing the gloves.

If you help or inspect other people's hives, use their hive tool and smoker! Only show up at their yard with your bee suit or veil. Yes, you should wear pants also.

So, how to fix the beekeeper and the swapping of frames and boxes between the hives? If the bees die in the hive do not split up the equipment. Repopulate the hive with more bees and see how they do. It just may have been bad genetics and the bees just could not overcome some disease or virus or it could be AFB. This way you will know for sure before possibly spreading the spores around by moving equipment.

N u m b e r
your boxes and frames and keep records on where that box and/or

frames are and go to. "B25" (box25) is at "H3" (hive position 3) and has "F102" (frame 102) out of "B31" at "H4". This way, if hive four has AFB you know that hive three also needs to be watched for AFB. Now you do not have to get to crazy with keeping records but it helps to at least know that you took a frame out of hive four and put it in hive three.

In Tennessee, we will report AFB the same day we find it. As soon as the state apiarist sees it and confirms it (usually the same day or the very next day). We dispatch the bees that evening and burn the hive in place. Then every hive in an eight mile radius is checked for AFB. Tennessee is one of the lowest amounts of AFB cases reported in the USA. Other states will suggest you do a shook swarm by shaking the bees on to new equipment and then see how they do. If the bees have the spores in their stomachs it is just prolonging the end. Plus, it will increase the chance of spreading the spores to more hives and equipment. Also, what happen to the old hive? Did they burn it or return to the honey house to get mixed in and forgotten about? The states that suggest this technique have many more AFB cases each year. If you live in one of those states you may want to help change that practice.

I hope you never see AFB firsthand and if everyone does the above mentioned in their bee yard we can help eliminate AFB. Another thing to remember is that Terramycin does not cure AFB, it only covers up the problem. Once the bees are no longer receiving Terramycin treatments the AFB will take hold and the hive is doomed.





**The Low
Down On
The**

LONG HIVE

Tony Seitz

I chose Long Langstroth type hive because the hive takes standard frames that are readily available and inexpensive. They are also easy to handle.



With a long hive you never need to lift a heavy super. The frames took my small strip of beeswax foundation which I prefer to use in wedge top frames. These frames would also take other beekeepers preference of different comb foundations.

To get greater ratio of honey to wax I use a nine-frame spacer after the first 10 brood frames. But you would not have to do this. These standard frames allow the installation of a



common nuc or package of bees.

I chose a clear Lexan follower board because I want to observe progress on comb building after adding a nuc or package of bees without opening their space. I can then see when to add more frames without taking out the follower board and disturbing the bees. It is so interesting to watch the bees through this 'window'.

I chose clear Lexan inner covers so I could open the top and watch them without disturbing the busy bees.

This adds another element of fun to my hive and allows me to show others live bees working inside a hive without dawning bee suits. I put small holes in the Lexan to allow air circulation.

The top will have a sheet of 1½" Styrofoam insulation which is not installed yet in this set of photos.

That insulation fits above the ventilation holes shown at the ends of the hive.

The top is hinged so old men like me can handle it by themselves. A



large wide entrance is in the end rather than the side, to encourage all the brood frames stay at that end. That makes it easy to harvest honey from the end away from the entrance. Generous space under frames to allow easy access to any part of the hives on the part of the bees.

No additional entrance will be needed. An entrance reducer is easy to control access in colder times. Only one entrance for guard bees to protect.

Heavier 1½" wood sides, and bottom, for better climate control. Especially in our Montana Winters.

Having the hive off the ground on legs makes it more convenient and



helps keep critters out of the hive. Legs do not have to be fancy and they could be just plain 2x4 lumber or even cinder blocks.

I plan to finish it with clear, water based, exterior, Polyurethane and add some decorative metal accents from Hobby Lobby.

The options for paint and/or decoration are endless. It can be a real piece of garden art.

These are not new ideas. Rather they are a compilation of ideas from Bee magazines and more experienced bee keepers.


The credits go to two people in particular. Dr. Leo Sharshkin of Horizontalhive.com, and Caroline Abbott of AbbottSustainableFarms.com. Dr. Leo Sharshkin puts on the most interesting and informative seminars on beekeeping you can



imagine.

And Caroline Abbott shares the basics of beekeeping and Long Lang Hive in language we backyard beekeepers can understand. Reading the information on the Horizontal Hive website and on Abbott Sustainable Farms website will give some actual dimensions of the hive box itself.

Even if the honey was not such a terrific food and saving more bees wasn't important.

Beekeeping is just plain fun!! 

Get Your Bait Hive Ready!

Morris Ostrofsky

Recently I was corresponding with a German friend for whom English is a second language about bait boxes. It seems that I was referring to enticing swarms with a temporary hive with frames and boxes while he was thinking about the type of box used for storing and transporting fishing gear. Once that was cleared up (with some mutual embarrassment) I realized that there was an additional similarity. With both fishing and catching swarms the first successful catch is memorable. In short you are hooked.



Here's some practical uses for bait hives, suggestions for when and how to set them up, placement strategies and how Oxalic acid can help eliminate 90% of the *Varroa* mites before moving a swarm to a standard hive.

Bait boxes are used during swarm season with the goal of attracting swarms. These swarms may be from your own or from other colonies. Of particular interest may be swarms from feral hives. In addition to just being fun, there are many practical uses for bait boxes:

Instead of a swarm leaving one of your hives and flying off into the sunset, a bait box can provide an easy way to lure them and prevent a loss of bees. This is helpful if you are gone at the time the swarm issues from one of your hives.

An easy and practically free way to increase your numbers. The swarms literally come to you.

Provide the opportunity to capture feral swarms. In my opinion the greatest potential value can be achieved by placing bait boxes in locations that are in the vicinity of feral hives that have been continuously occupied for three or more years. The greater the distance from managed hives the greater the likelihood that the captured swarm came from a feral colony. If these bees are doing that well, even without being treated, these are the swarms you want. Ideally these colonies may have developed a tolerance or resistance to *Varroa* mites.

A swarm of bees in May is worth a bail of hay.

A swarm of bees in June is worth a silver spoon.

A swarm of bees in July is not worth a fly.

There are various renditions of this saying. Regardless of the verses the take home message is that swarms captured early in the season are more valuable than those caught later. Be aware of when swarms start in your area. The goal is to have the bait boxes in place when the scouts start looking for a new home. Here in the southern Willamette Valley, Oregon, the first swarms start around April 1. I set up my bait boxes around three weeks before this date.

Bait hives come in a variety of designs. They range from standard hives to molded paper mache plant pots. While the plant pot containers are convenient, I do not recommend using them. Not only are they expensive but it can be a mess to transfer the bees and comb from them to a standard hive. Removing comb from these can result in lots of dead workers and possible

queen loss. This is especially true with remote boxes that are not checked on frequently.

I choose either a Langstroth deep with a solid bottom board or a cardboard box depending on where I place them. I use Langstroth bait boxes in an area I consider to be secure such as my or a nearby friend's property. In these locations there is little or no chance of vandalism. An important advantage of using standard Langstroth deeps is that the volume is consistent with Dr. Tom Seeley's recommendation of 40 liters (1.4 cubic feet). Additionally the deep frames can be moved into and out of a box making it easy to transfer them into a permanent hive later.

When using a Langstroth deep the entrance must be reduced to two square inches with a block of wood. Again this is consistent with Dr. Seeley's research results on bait hives. He found that scout bees preferred this size when given a choice. The down side of Langstroth deeps is that they are heavy. So safety can be a concern if the box is positioned in an awkward location or in a tall tree.

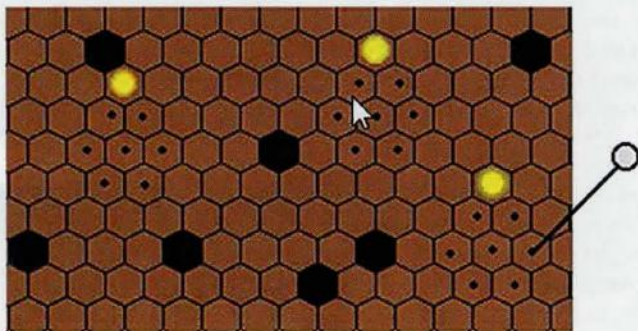
I use cardboard bait boxes in remote areas (two or more miles from managed colonies) where the possibility of loss is higher. The investment is minimal so if the box is vandalized it is not as much of a financial loss. I have found local home improvement stores to be a rich source of free cardboard boxes.



Armed with a tape measure I select boxes approximately 20 X 16 X 10 inches. These dimensions are close enough to those of a Langstroth deep; 40 liters (1.4 cubic feet). I use a long staple to attach not only the frame rest but also the outside handle to the box. Including the handles gives the box greater support and ease of handling when transporting it.

Regardless of which bait box I use, the configuration of the frames within the box is the same. One old drawn brood frame FROM A HEALTHY HIVE is placed at the end of the box opposite the entrance. This frame serves as an attractant to the scout bees looking for a new home. It also acts as a pre-made location for the bees to start housekeeping. One possible problem with drawn frames is wax moth damage. If the wax moths are actively chewing up the wax, the scout bees will find this offensive and avoid the box. The drawn frame can be protected from wax moths with a biological control called *Bacillus thuringiensis* or Bt. (formerly marketed as Certan). This is a *Bacillus* spore that is non-toxic to bees or people but deadly to wax worms. The product is now marketed as XenTari and can be found on the internet.

In addition to the drawn frame, I place nine wired frames with foundation starter strips in the remaining space. The open space created by using starter strips vs. full sheets of foundation makes it easier for scouts to measure the volume of their prospective home.



Starter strips also act as a guide when the bees quickly start building new comb. As in any situation when using starter strips, the box should be level. The wire supports newly made fragile comb so there is no damage when being transported.

The final addition to the box is the application of a lure. Last Spring I tried a new product called Swarm Commander Swarm Lure. This swarm lure was formulated to mimic the "Nasanov" pheromone which is used by workers forming a swarm cluster. In the past I used lemon grass essential oil. I have found Swarm Commander to be more attractive than lemon grass essential oil. I increased the number of swarms I caught this year to 10 from a previous average of one to two a season. The lure should be refreshed about every two weeks.

Other than the entrance, the box should be completely sealed so no light or water can enter. The entrance should measure about two square inches, or a round hole about 1 ¼ to 2" in diameter. A nail placed across the entrance will discourage birds from taking up residence in the box.

When trying to attract a swarm from your own apiary, the bait box should be at least 300 yards from your own hives. When choosing a remote location, look for an area that has older trees and is at least two miles from managed colonies. Ideally the box will be about 15 feet off the ground. This is not always



Seeley Information Bulletin #187 Cornell Cooperative Extension publication.

Swarms offer an opportunity to start a colony off almost mite free. Oxalic acid and Hop Guard can be used to deal with *Varroa* mites while still in the field. This way you can avoid bringing a mite bomb into your apiary and you can deal with a mite population that is phoretic (outside of brood cells). Swarms with mated queens do not produce brood for at least the first three (3) days after going into a bait box; it takes 15 days for virgins. The time to take advantage of the opportunity to treat is limited but worth the effort to give your new colony a healthy start. Follow the label directions for either product.

I usually leave the occupied bait box in place for at least two weeks before moving it to my apiary.* I find moving it early in the day before the bees are flying is the easiest method. A screen can be attached over the opening to insure that the bees will stay put until you are ready to release them. If you used a wooden hive box be sure both the bottom board and the cover are securely attached. If moving a cardboard box, make sure all the tape is secure and that dampness hasn't weakened the box.

Let the bees settle for a couple of days before transferring them to a permanent hive. This is where using movable frames makes this step quite easy on both the beekeeper and the bees. If the new colony does not have brood at the time you transfer them, give them a frame of open brood from another colony. This is very effective in preventing them from absconding.

practical. I have attracted swarms to a picnic table top. The bottom line is to consider the ease of box's placement, retrieval and your safety. For a more detailed description of bait box guidelines see "Bait Hives for Honey Bees" by Dr. Thomas D.

One and a half to two weeks after you have transferred the bees to your apiary, you should see the first capped brood. One of the ways to improve the genetic make up of your colonies is to test for hygienic behavior. The Pin Prick method is simple and does not require any special materials. Cappings of newly sealed brood cells are punctured with a fine pin to kill the larva beneath. After 24 hours, the number of cells uncapped and cleaned out are counted and recorded. After several replications under different environmental conditions, colonies which have cleaned at least 90% of the cells within 24 hours are considered hygienic. See the Glenn Apiaries website (www.glenn-apiaries.com) for specific directions.

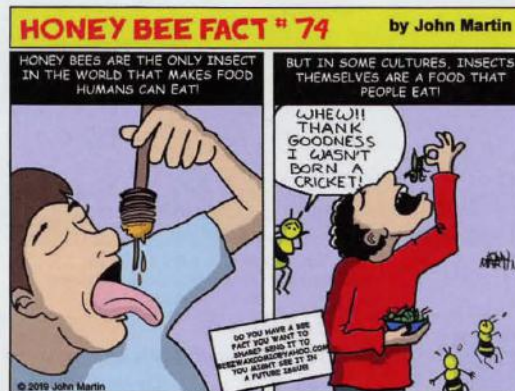
Colonies that exhibit little or no hygienic behavior can be requeened with a hygienic queen. Note the assumption is that any *Varroa* mite infestation was previously controlled before the captured swarm was taken to your apiary. If this was not done, *Varroa* must be dealt with prior to requeening. Defensive temperament or a poor brood pattern are also good reasons to requeen with commercial queens that are advertised to have hygienic behavior. In areas that are known to have Africanized bees, the queens should always be replaced with marked queens.

I have a different strategy for my bait boxes for the Spring of 2019. My long term goal is to establish an apiary that requires the use of less miticides. My focus will be to place bait boxes in remote locations. Because the bait boxes will be placed away from managed colonies, I hope to capture feral swarms issued from colonies that have the genes for mite tolerance or for hygienic behavior. I plan to check the bait boxes every three days. Checking this frequently will allow me to determine when the boxes are occupied and take advantage of the limited opportunity to deal with mites. When I see bees busily going in and out carrying pollen it will be a sure sign that the box is being used as a new home and not merely being scouted.

Once I determine that a box is being occupied, I do not plan on moving it for at least two weeks because I want the virgin queen to be mated in the remote area. I will wait this long to account for afterswarm queens who need approximately 10 days to be mated and to start producing brood. If the weather has not been good enough for a mating flight, I will leave them longer than two weeks. While the odds of capturing a swarm with the hoped for genetics are low, I believe it is worth the effort and it is a lot of fun too.

Catching swarms in bait boxes is like receiving a genetic box of chocolates – you never know what you are going to get.

I would appreciate hearing from you after trying the suggestions outlined in this article. Please contact me at Ostrofsky@pacinfo.com.



FIGHT the MITE

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The *Varroa* mite poses a serious threat to your bee colonies. Protect them with **HopGuard® II**—the effective, all-natural solution to *Varroa* mite problems.

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Swarm Box

Frank Mortimer

SWARM, SWARM EVERYWHERE A SWARM

Last Spring in New Jersey was a roller coaster of weather, which you know is never a good thing for a beekeeper. In February, we had temperatures in the 70s, it felt like Winter was over and sunny days were here to stay. It seemed like Spring was coming two to three months early and I was already dreaming of having honey supers on before St. Patty's day. But Mother Nature had other plans and in March, we had a blizzard, with some areas getting well over a foot of snow. The snow melted, but the colder than usual temperatures stayed around through April, which was then followed by an unseasonable amount of rain. I imagined that my hives were like drag racers at the starting line, revving their engines, ready to get to work and start bringing in the nectar to make lots of honey. But instead, the bees were stuck inside the hives, cramped, until the weather finally cooperated. Just after tax day, I knew Spring was finally here. I didn't have to look outside to see the sun shining, or hear the birds singing. I knew Spring was finally here because our club's Facebook page was filled with posts about swarms. Here a swarm, there a swarm, everywhere a swarming swarm. It had been about six years since I'd seen this many swarms in our area. Back in 2011, we had a similar start to our season, with weeks filled with rainy days. When you visited your hives during the few non-rainy hours you would just see how grumpy bees get when they're stuck inside for too long. It's like having a bunch of six-year olds hopped-up on sugar, standing at the door trying to make the rain go away.

Swarming is caused when the bees feel they are too crowded inside the hive, and prolonged rain

keeps more bees inside their hive, which only exacerbates the problem. Also, for new beekeepers, it is also important to remember that bees do not count foundation as more space, only drawn comb counts as space. So, if you are just starting out, it's important to go into your hives to see where your bees are, feed to encourage comb building – especially when it's raining, and add your next box *before* it is too late.

For established hives it's always



important to remember that when bees are at the top of the hive, with only the inner cover above them, they feel like they have run out of room and this, too, can cause swarming. The best way to prevent the bees from feeling they have run out of room is to reverse your boxes in March to prevent swarming in May. However, remember that you should always check where the brood nest is *before* reversing your boxes. If your brood

nest is completely in the top box, go ahead and reverse your boxes. But, if you have brood in both boxes, you should keep the brood nest intact, as the bees may not be able to keep two separate brood areas warm if the temperature drops.

I also think that putting honey supers with drawn comb on early can prevent swarming, as you have given the bees lots of extra space. One point of debate when you put honey supers on is whether or not to use a queen excluder. If you're using your supers to also prevent swarms, then the answer is, **NO**. Using a queen excluder can also create the "this is too crowded" feeling because you are limiting where the queen can go. But, if you don't use the excluder, you will have to deal with brood in your honey supers. Personally, I'd rather deal with the brood than my hives swarming. Especially when the queen lays early in the season as I have found that as soon as the brood hatches out, the bees will go back and fill those cells with nectar, so I end up with honey supers filled 100% with honey and 0% brood.

I've been keeping bees for about 10 years. During my first couple of years, I was so focused on limiting the mistakes I made to my own hives that I never went after any swarms.

Starting in 2011, I added my name to the New Jersey Swarm page, as I felt I was ready to make mistakes beyond my own hives. The New Jersey Swarm page is set up so that if someone sees a swarm, they can search for a beekeeper by town or county, who will come and remove it. The good news about living in such a populated area is that if a hive swarms, someone is going to see it. Having thousands of beekeepers throughout one of

the most densely populated states means you tend to get a lot of swarm calls. The bad news is that someone is going to see it, before you do. When I first decided to start catching swarms back in 2011, I wasn't really prepared to catch them, so when I got a call, I had to scramble to get everything I needed to go catch one. Usually, I also forgot something or wished I had packed one more item to make my swarm catching go more smoothly.

In the Winter of 2012, while thinking of what bee stuff I could do, I decided to create the ultimate swarm box. I used a nice-sized cardboard box, and I cut out ventilation windows on all four sides, then covered the "windows" with screen, so the bees had plenty of air, and I wouldn't have to worry about them overheating or getting out. I also reinforced the box with tape to keep it sturdy because I planned on using it to catch a lot of swarms. I then filled the box with everything I might need: garden shears to cut branches; Gorilla tape to seal the box once the bees were inside; a bottle of sugar syrup to spray the swarm; an old bed sheet to wrap around a tree; some old comb to make the bees feel at home; and even a stack of New Jersey Beekeepers Association educational flyers about swarms to give to anyone who wanted to understand what was happening. It was a busy, creative Winter.

Once I had my ultimate swarm box, complete with all the swarm supplies you'd ever need, I put it in the trunk of my car, so I would be ready for that next call. And man was I ready! When I started hearing about swarms in other parts of the U.S., I'd get even more excited, thinking that soon it would be my turn. But days turned to weeks, weeks turned into months without receiving even one call. So, I put my ultimate swarm box, complete with all the swarm supplies you'd ever need, away for the season. The following Spring, I pulled out the ultimate swarm box, complete with all the swarm supplies you'd ever need, and put it back in the trunk of my car, and waited. And, I waited. I waited for three more seasons, and still, I was never able to use my ultimate swarm box, complete with all the swarm supplies you'd ever need. Four years in a row, I had put everything in my car so I'd be ready

for that swarm call and nothing, not even one swarm call. Yes, there had been swarms in my area, but other people always seemed to get the call, not me. Several beekeeping friends would call to tell me all about catching the "biggest swarm you've ever seen". I would listen to their stories, imagining it was me who was catching the swarm, and thinking how I'd use all the swarm supplies I'd ever need to make the job go as smoothly as possible. There were a few times when I debated, (with myself,) about skipping family vacations, just so I could be ready for when that swarm call finally came in. If there were a sunny day after a few rainy days, I'd tell my boss, I needed to "work from home," just so I'd be ready.

Throughout those four long years, I was contacted only twice about honey bees, and both times it was a feral colony living inside a concrete wall of a building that would require a jackhammer or some small explosives to get the bees out. Every Fall, I'd get lots of calls for which I asked two questions: 1) Does the hive look like it's made of paper?" and 2) Do they look shiny like they're made of plastic? I would then say, "Those are yellow jackets, not honey bees."

As this year began, I saw my ultimate swarm box, complete with all the swarm supplies you'd ever need, sitting in my garage mocking me. As it was sitting there, all cozy on its shelf, I could tell it was thinking, "When does my Summer long ride around in your car begin?" So right then and there I decided, not this year swarm box! This year you're going to stay right where you are. This year, I'm not wasting a bunch of my trunk space just so you can go joyriding around, enjoying the Summer sun. This year is going to be different!

Boy was it different. Starting in early April, I began hearing about swarms in New Jersey. But I wasn't going to budge, swarm box stayed in the garage.

But finally on Mother's Day, I got the call! It's was five years after its creation, but I was finally going to use my ultimate swarm box, complete with all the swarm supplies you'd ever need! I arrived at the home where the swarm was taking up temporary residence. I handed the homeowners several copies of

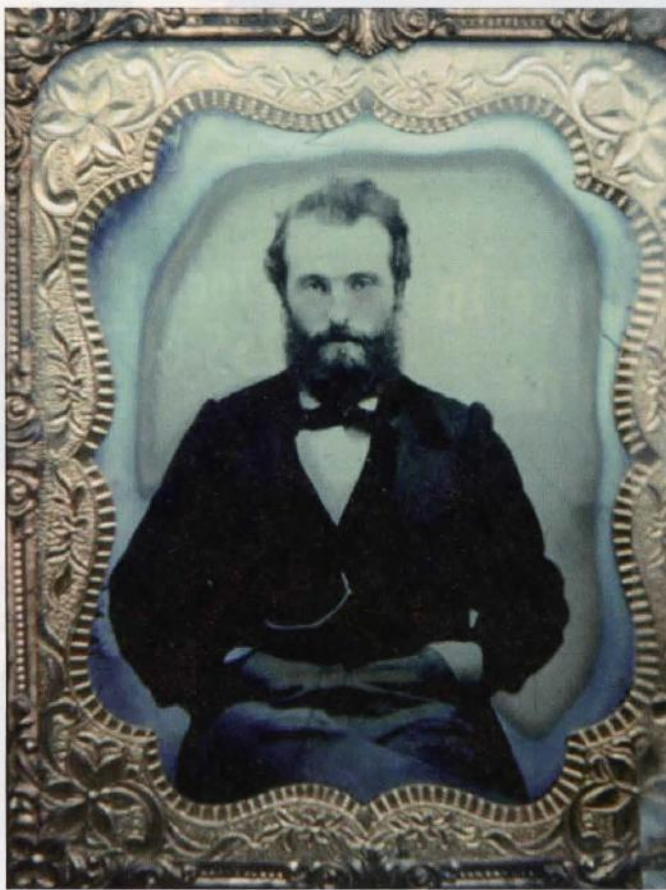
the pamphlets I'd been hauling around for five years. I positioned the ultimate swarm box underneath the swarm. And man oh man, it was a beautiful swarm. It was teardrop shaped, which I'm convinced represented tears of joy because the bees were *that* happy they would get to be inside the ultimate swarm box. I used the garden shears to cut the few branches the swarm was attached to. Then, like they were on the backs of angels, my swarm glided smoothly into the box. I closed it up, used the Gorilla tape to keep it shut, and I was waving good-bye to the homeowners less than 15 minutes after arriving. If I just caught the swarm and left, it would have been taken me less than five minutes, but I spent several minutes explaining to the family what a swarm was, why bees do it, and how gentle the bees are when they swarm. Then after I caught the swarm, I also spent nearly 10 minutes just admiring the bees in my ultimate swarm box. I felt like a proud papa admiring his newborn child.

I drove back to my hives with my ultimate swarm box finally fulfilling its destiny by transporting a newly caught swarm. During the drive, instead of buzzing, I could have sworn I heard them humming because they were so happy to be enjoying the pure luxuries of the ultimate swarm box. Once I arrived at my apiary, I set up a nuc box and finally poured the bees into their waiting new home. As the swarm slid out of the box, many of the bees looked over at me and gave me tiny bee thumbs-ups to let me know how wonderful it was to experience the ultimate swarm box.

If I live to be 115, I'm not sure if catching a swarm will ever again go that perfect for me. I'm back to keeping the ultimate swarm box, complete with all the swarm supplies you'd ever need, in my car.

So one thing I know for sure is: With that swarm box back in my car, there is no way I'll be getting another swarm for the next five years.





A SON'S MEMORIES OF A.I. ROOT

*Suggested by the last days and
religious characteristics of his
remarkable father.*

Ernest R. Root, 1923

A.I. Root was born near Medina, Ohio, Dec. 9, 1839. He rested from his labors April 30, 1923. The funeral, which was held in Medina May 2, was not a funeral in the ordinary sense of the word. Everyone who spoke seemed to feel that A.I. Root was not dead but that his "soul was marching on." Not a tear was shed while the eulogies by the prominent men were being pronounced. So far from being a time for sorrow it was a time of rejoicing over his triumphal entry into the new life that would go on forever.

After the Y.M.C.A. quartette sang one of Mr. Root's favorite hymns, "From Sinking Sands He Lifted Me," Dr. Drew, his pastor, read some appropriate scriptures and then told of Mr. Root's love for home church. Dr. H.S. Fritsch, a former pastor, spoke of the help and inspiration he had received from his departed friend; of how A.I. Root's "amens" during the sermon used to cheer him; of how, if he did not get these, he felt that there was something seriously wrong with the sermon.

Dr. Howard H. Russell of Washington, D.C., founder of the Anti-Saloon League, told how as a student at Oberlin College, encouraged by his classmate Ernest, he had come to see A.I. Root; of how the latter, with Mr. Metcalf, favored the League in its struggles for existence for the first two years; of how, for years afterword, his prayers and his money had helped to make the League the great power that it now is.

The Y.M.C.A. secretary, Mr. Barnes, then sang "I Shall See Him Face to Face." It seemed as if A.I. Root's hope of years as expressed in the hymn was at that very moment being fulfilled.

J.A. White, superintendent of the Ohio Anti-Saloon League, the man who had put Ohio across with 189,000 majority against light wines and beer at the last election,

told, as had the others, of how he had been helped by A.I. Root's personality and prayers.

Ex-Congressman Judge A.R. Webber, a lifelong friend and admirer of A.I. Root, called attention to the fact that A.I. Root still lives in spirit and influence. The papers said John Brown is dead; but in the language of the immoral song, "his soul is marching on."

The last speaker was the Rev. Mahlon Woolf, who said he had been led to Christ and into the ministry largely through A.I. Root's influence; and then brought out the point that his old friend was a personal soul-winner; that he somehow found it easy and convenient with a new-found friend to open the way to Christ.

Thus closed a funeral that was impressive but not sad.

Early Days Before His Conversion

Writing of his conversion I shall tell of the steps that led up to it, for it was not a sudden entrance into the kingdom, but a growth. I am recording these facts so others who are not "finished products" may see the process by which God sometimes uses some of his children who are not perfect.

A.I. Root was a frail child. As a man he was never strong, often ailing, and particularly sensitive to a cold. Naturally with an active mind that pushed his frail body beyond the limits of his strength, he was of a nervous temperament. If in the early days, things did not move as fast as he thought they should (and there was not one person in ten who could keep up with his fast pace), some one was likely to be pushed along in an unceremonious way. With a voluminous correspondence that demanded his personal attention, a bee journal, and a factory

THE THUNDER AND LIGHTNING!
ELECTRICITY, GALVANISM, ELECTRO-MAGNETISM, MAGNETO-ELECTRICITY!

Attention: the Lovers of the

Prof. A. I. ROOT.

On this evening,
At the

FLASHES OF LIGHTNING!

Miniature Glass Blowing, by the Alcohol pipe Combustion of Zinc and Iron Wire in

Galvanic Slippers.

SPRING ORGAN.

PROGRAMME-

Doors open at 6 1-2, Commences at 7 1-2 o'clock.

ABOUT 11:00

of employees, it is not surprising that he became nervous. He undertook a work clearly beyond his strength. His impetuous nature caused him to step on the toes and heels of his associates because they could not move fast enough.

When A.I. Root was 18 he went on a lecture tour in which he actually paid his own way without calling on his father for a dollar. With a full beard at 18 he passed muster for a much older man, styling himself "Prof. A.I. Root." In later years he took no pleasure in this "handle" to his name. After his lecture tour, when he came back to the old farm he became interested in repairing clocks and watches. He took a course in watch-repairing, and at the age of 21 started a watch-repairing shop under the pretentious name of A.I. Root & Co. It is needless to

say that he was the whole thing, "company" and all.

He read everything he could get hold of in each one of these lines of activity, and talked with every one who could give him any information. When he got to riding other hobbies such as beekeeping, gardening, windmills and publishing a bee journal, he showed the same intensity of spirit that enabled him to master everything he undertook, and the strangest part of it was that he made all of these hobbies pay dividends not only in experience but in actual money.

His lecture tour, the first of his independent enterprises, paved the way and gave him experience with the world and mankind in particular that was invaluable. His watch-repairing business paid; his jewelry-manufacturing business paid; his bee business paid; his gardening paid. Carrying on all these lines of work, his mind was constantly reaching out to new fields of activity.

As a child, when he was frail and slender, he contracted lung fever, or what is now called pneumonia. The neighbors said that, had it not been for his good mother, he would have died in his early attack, and the world would have lost not only a genius but a benefactor.

His Thorn in the Flesh

A.I. Root in the early days was, as stated, a nervous and sickly child. He had a quick temper; when things did not go right he would fly into a passion. He grew up to manhood, drifted away to some extent from the church and Sunday school of his mother, and into skepticism and doubt. While he was thus drifting, his mother and his wife were praying for him. I remember how on Sunday he and I would walk down to the farm, two miles away, to talk with his dear old sainted mother. I well remember, as we walked back, how he pondered on his mother's words, and how careful he was not to fill me up with notions of skepticism.

During all this time he was building up a jewelry business till he was melting 200 silver dollars in a day for his "raw material." The cares of business were becoming heavier; his work began to multiply; there was a struggle in his nature between the skepticism of Ingersoll and Tom Paine and the religion of the Lord Jesus Christ as taught him by his mother. His occasional outbreaks of temper made him fear that he would have to change his mode of thinking and his habits of life. After one of his outbreaks, seriously fearing that the uncurbed habit would lead to something serious, he concluded, after a talk with his mother, that the only way to cure it was by giving himself unreservedly to the Lord Jesus Christ.

In some respects his conversion was like that of Paul's, with this difference: that there was no miraculous manifestation of any sort. It was a complete turnover from the old life to the new. The change was so sudden that his friends remarked it. A.I. Root did not hesitate to tell the world that he had found a new way. With all the intensity of his make-up, with that bubbling enthusiasm that manifested itself throughout his life, he seemed eager to have the world share with him his new-found Lord.

I remember the first morning after the change had taken place; he seemed to feel that to become a Christian meant a complete turnover then and there. He was going to do the things that a Christian was supposed to do. I remember the first time he said grace, of how in a halting voice, he asked God's forgiveness and help, how he asked that the old doubts should be dispelled and particularly how he asked that God might help him to live as a Christian every day of his life.

It was noised around the country that A.I. Root had become a Christian, and he was asked to speak at a number of the churches, an opportunity that he readily accepted. And then when his old-time friends of the Tom Paine and Bob Ingersoll persuasion joked him a little, he would come back with that simple faith of his and tell them that he had found something that was infinitely better, that satisfied as nothing else ever did.

Almost immediately after his conversion, A.I. Root took up Sunday-school work. He had a class of boys that had become so unruly that nobody apparently could do anything with them. Some of those same boys today are professing Christians, and one of them was for 10 years a missionary in China, the boy who said he was the "hardest" one of the whole lot to control.

But taking up ordinary church work was not enough. A.I. Root went out into the byways and hedges and established Sunday schools. One of those schools in particular became such a power for good that it put a near-by saloon practically out of business. The proprietor

told him that if he didn't quit that Sunday school some dire things would happen to him, but A.I. Root went on just the same. And the saloon closed.

A little later Mr. Root had a Sunday morning Sunday school before church, made up of employees, and still later he had what he called his "noonday services" in the main office. Every day the employees at 10 minutes before 12 would assemble. One of the gospel hymns would be sung, there was a reading of scripture, a talk and then finally a prayer by A.I. Root. Some people called them "noonday prayer meetings." Call them what you like, they enabled A.I. Root in the early days to harmonize all difference that might exist between him and his employees.

But he found he could not break that temper in a day. For some time after he became a Christian that same old thorn in the flesh would trouble him. Even after he sold out his jewelry business and went into the manufacture of beekeeper's supplies and publishing a bee journal, he had a constant struggle with that temper that was the direct result of overwork and of having too many irons in the fire at one time. During this time, from 1875 to 1883, he went through some financial difficulties that would have killed most men; but that irrepressible spirit of his to conquer self, sin and the world could not be downed. His biggest fight was with himself.

On one occasion he had written a Home paper on the text, "Great peace have they that love thy law, and nothing shall offend them." The next day everything seemed to go wrong. He was irritable; and when one of his clerks quoted the text because his mood showed anything but "peace," he humbly begged the pardon of all of them. They knew that, with his weak body, he was doing the work of vigorous men.

It was not until the period between 1890 and 1895 that he began to let go of his business. Then it was that his impetuous nature began to soften down until he was at peace with all the world, and nothing could offend him. But this did not come until after a long, long struggle.

Most men, had they gone through what A.I. Root did with his weak and overworked body, doing the work of five men, would possibly have cursed God and man, and given up the fight. It is remarkable that, through all of those strenuous days, he should have been even as calm as he was.

He was so broken in health that it became necessary for him to take long rests, spending the Winters in Florida and his Summers in Michigan, throwing the responsibility

of handling the business over on his sons and sons-in-law. He made a trip to California in 1891. It was during these rest-periods that he regained his health and with it that quiet spirit that dominated his later life.

Lived in Attitude of Prayer

In his later years A.I. Root was almost constantly in the attitude of prayer. He spoke often of "God's gifts." If he found a new plant or shrub it was "God's gift." Frequently through his waking hours he would say, when anything pleased him, "Praise the Lord!" It was spontaneous. He was so full of love of God that he said "Praise the Lord" anywhere and at any time. If a nice shower came he would say, "Thank the Lord." When the sun shone it was "Thank the Lord." When I met him at the Cleveland Union depot on his last trip from Florida he called out in his delight, "Praise the Lord!" and when I took him down to the lunch counter for some hot milk and milk toast he said, "Praise the Lord!" The waiters smiled at this little old man, and wondered. It was in this way in public places he would unconsciously start people to thinking seriously about God.

He had another little prayer, just as spontaneous – "Lord, help!" It was his favorite prayer when he needed something, and which lifted his burden from him. He used it in the big and little things of life. When he and I were motoring down to Florida two years ago last fall we got stuck in the Georgia mud, he uttered the little prayer, "Lord help!" not once but several times: I thought I needed men and mules. We were badly stuck, with the rear wheels sunk below the hubs. I went after a span of mules and some men. It took four mules and eight men to get us out. As soon as we got on hard ground father said, "Thank the Lord!" I was covered with mud. The mules had broken the door and smashed the guard of a new machine, and as I was in anything but a prayerful mood, I said "It was the four mules and the eight men that got us out – not the Lord."

"Yes," persisted father, "but the Lord helped you to find the men and teams so quickly. We ought to praise Him that the machine is no worse than it is, and that we can now go on."

And so it was with father, "Praise the Lord." That little prayer, "Lord help!" was indeed a great help to him, and the Lord did help in ways that seemed almost uncanny as his autobiography will show.



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A.I. Root's Last Days

When A.I. Root wrote the Home paper for May he said to his daughter, at the time, that this might be his last one, and that he thought he had finished his lifework. When I brought him home from Cleveland on his return from Florida I could not help thinking the conversation between the disciples in that walk to Emmaus when they said, after the disappearance of the Master, "Did not our hearts burn within us while he talked with us by the way?" and so I, too, thought as we rode. As I look back, I see that father was telling me, not directly but indirectly, that he was going soon, notwithstanding that he expressed himself as feeling remarkably well. He spoke of the Lord Jesus Christ; of his hope concerning the hereafter; of meeting mother, or "Sue," as he always called her, and of his abiding faith in prayer.

As he talked I took him back by the long way, for I was enchanted by his words. I was impressed by the feeling that, if there was ever a man in these later days who walked close with God, who knew God and who loved God, that dear old father of mine, whom you know as A.I. Root, was one of them. His words were those of benediction, of love, and of affection; and my brother Huber, after an hour's talk with him the day before he was taken sick, was impressed with the same thought – the love of God. God seemed to reveal to him almost the day when he would give up life's work.

A.I. Root's Last Hours

He seemed to be in good health Friday, the 20th. On the 21st he was taken with a slight cold. He had often had these ailments, and so we thought little of it. On the following Sunday my sister, Mrs. Calvert, was a little concerned as father became worse. As the days went by we called a special nurse. I told father the time had come when we wanted to give him the best care – that we thought a trained nurse would be necessary. We thought he would object; but he said, "Just as you say." After she arrived he said, "Praise the Lord! Indeed you have given me a good nurse; and the best part of it all is, she is a lover of the Lord Jesus Christ."

Let me digress right here a little. One of the prominent characteristics of A.I. Root was the tactful and beautiful way in which he would find out from a newfound acquaintance whether he was a Christian. Some people, with the best of intentions, will give offense, but never A.I. Root. If a certain one should say he was not a Christian he would enter a very gentle plea; and the result has been traced in numerous cases when these same people remembered A.I. Root's words, and later would give their heads to God.

In the same beautiful way father had a happy faculty of rebuking boys when they used profane language; but in doing so there was nothing that could give offense. A gentle smile and a kindly look from the eyes of that man of God would somehow grip everyone who came in contact with him. But to return.

On Sunday he seemed a great deal better. I took care of him while the nurse was resting. Suddenly, he roused up, turned to me and, looking straight into my eyes said

with a bright look, "Is this Ernest, my first-born?" He often addressed me thus.

When I assured him he said, "Thank the Lord." He then paused a moment, and in a somewhat feeble voice said, "Praise the Lord. He has delivered me from" – I could not make out what he said; but I thought he said it was "from death." I now think he meant the fear of death. A little later he was resting quietly, and I went home with the belief that the crisis had passed. But about three o'clock on the morning of April 30 the nurse saw that he was getting weaker and sent word to all of us; but before we could get to his bedside his spirit had gone to its eternal rest. He died quietly, just as though he had fallen asleep.

I can not close without quoting an editorial from the Medina County Gazette, By W.B. Baldwin:

Amos I. Root

Amos I. Root was one of the most remarkable men of the past two generations, remarkable not in one way, but in many ways. His was a many-sided character, if any man ever had one. Inventor, writer, manufacturer, publisher, thinker, philanthropist, reformer, moralist, agriculturist, Christian. In all of these his character was marked and he was a leader. In most of them he loomed large. Even as an agriculturist, he tilled the soil in a modest way, yet as in everything else he excelled in this, for he not only made two blades of grass grow where only one grew before, but he was gifted with the ability to make things grow where they had never grown before. In many ways his reputation was world-wide.

But what was best about him and his works and his life was that whatever he put his hand or his mind to, it was with the idea of benefiting humanity. And it can be truly said of him that the world was better for his having lived in it. He did not live for himself alone – or he would not have lived as he did – but unselfishly and whole-heartedly he lived for others, for his family, for his friends, for his employees, for his neighbors, his fellow townsmen, for humanity. And he did much to make them all better and happier.

But if there was one characteristic that stood out above all others, it was his absolute sincerity in everything that he did or undertook. No amount of scoffing or ridicule – and he endured it many times – could swerve him from his belief or purpose and he went straight to his work without faltering or swerving from the path he had chosen. Nor was he above admitting it when he found out he was wrong or in error.

Although he retired many years ago, from active management of the business that he founded and made a success, he did not retire from an active life; but he continued to move among us, brain and hands always active, easily the leading citizen of the community, as he was the most widely known – for his works and name went to the uttermost parts of the earth – but he is mourned not so much as a public personage, but as a gentle, lovable, God-fearing, man-loving, charitable character. Though dead, his influence will go on and on. The prayers of a grateful and loving community follow him to the better world.



May & June

In The Beeyard

MAY

UNWRAP HIVES

Winter wraps can be removed when the night temperatures are staying above 0°C.

Colonies wintered indoors can be moved outside. If unsure of timing, check with other beekeepers in the immediate area. Some beekeepers unwrap when garden planting may be done without a concern for frost. Keep in mind that the timing depends on the type of Winter wraps and their insulating value. Removing Winter wraps too early will cause the bees to consume honey to maintain the inside temperature of the hive. A strong colony low on honey stores can starve in the Spring, if conditions are not right for foraging (too cold or lack of nectar source). A weaker colony will benefit from staying wrapped if the Spring remains cool.

MONITOR FOR VARROA

An early check for *Varroa* mites is a good practice. Knowing the hive's early Spring mite levels will allow planning of any required treatments and to begin treating as soon as possible.

SPRING CLEANING

On a warm day when the bees are actively flying, the hive can be opened. All the frames, boxes, inner covers and bottom boards can be scraped and cleaned. Spring is the best time of year to scrape colonies since the bee populations are smaller and the Winter debris build up needs to be removed. Dead colonies should be inspected to determine the cause of death. If the cause of death is ruled as not contagious, the equipment can be cleaned and made ready for installing nucs or making splits. Equipment not required immediately or unsuitable for re-use should be removed from the beeyard as soon as possible. If there are signs of American foulbrood (AFB), incinerate the equipment immediately. Since there are usually a number of empty or almost empty frames, this is a good time of year to replace old and unwanted frames with new comb or foundation.

MAY & JUNE ASSESSMENTS

It is a good idea to thoroughly assess the colonies for queen status, strength, disease, and mites early in the season. Examine each colony frame by frame.

Check the following:

*Queen status: The presence of eggs in the cells and a solid brood pattern are signs of a healthy productive queen.

*Colony strength: Count how many frames are covered with bees and how many frames are covered with brood. Check honey and pollen stores. The amount of stores will depend on the bee population and foraging conditions. A colony lacking pollen will not be able to maximize brood production.

*Stores: Lack of honey stores can result in starvation, if there are no nectar sources available.

*Presence of diseases: Examine for brood diseases (e.g. chalkbrood, sacbrood, American foulbrood, European foulbrood) and for symptoms among adult bees (e.g. nosema). Examining for diseases should be conducted every time a colony is opened and frames removed, or about once a month. Sometimes, chalkbrood and sacbrood occur in the Spring or with a newly laying queen. However, if sacbrood and chalkbrood are an ongoing problem, the colony should be re-queened.

CHECK COLONIES FOR SPACE

Ensure that the bees are using their space well. Consider how large the bee population is and how much of the brood chamber contains honey and brood. Examine the brood frames. Reverse brood chambers (if running double brood chambers and the bees and brood are completely in the top brood box) or rearrange frames to encourage the queen to lay in empty frames, but keep brood frames together in the middle of the box. Unused brood chambers can be removed from weak colonies and added to strong ones for preservation or in anticipation of making splits.

SPRING MITE AND DISEASE TREATMENTS

After determining the colonies' health status, treatments should be applied immediately to ensure that the treatment time and withdrawal period (if any) end before honey supers are put on. Check the current Ontario Recommendations distributed by the Provincial Apiarist for proper treatments. Current recommendations can be found on the OBA (www.ontariobee.com) and OMAF apiculture websites. Always read and follow the directions on treatment labels for maximum efficacy and to decrease the development of resistance and the risk of residues.

JUNE SWARMS

As the season progresses, the bees will build up their populations and stores and potentially become overcrowded. A colony that swarms will lower its population and have a reduced honey crop.

SWARM PREVENTION

Providing additional supers as the bees need space, destroying queen cells if there is a healthy, laying queen and requeening colonies that are inclined to continuously swarm will help reduce the frequency of swarming. You may also want to consider splitting strong colonies to reduce chances of swarming.

SPLITTING COLONIES

Instead of purchasing colonies or nucs, split existing colonies to increase colony numbers. Only strong colonies should be split to ensure survival. Also, splitting a colony will decrease the honey yield of the original colony. Making splits requires planning, equipment preparation, and a mated queen or queen cell to introduce into the queenless split. It is possible to let a queenless split raise its own queen, but the amount of time it takes will weaken the colony overall. In addition, introducing new genetics to the bees is important, especially from bee breeders who actively select breeding stock that are good honey producers with disease and mite resistance.

CATCHING SWARMS

Catching swarms can be an easy way to increase colony numbers. It can be profitable to advertise services for swarm removal. However, remember that

it is possible to introduce disease and bad genetics when bringing swarms of unknown origin into an operation. If colonies tend to swarm even though they have adequate space, a beekeeper may be propagating swarming genetics. The process of catching a swarm can be daunting, but the main goal is to get all of the bees, including the queen, into a bucket, box, pail or other form of containment until the bees can be placed into an empty brood chamber. Ensure that the bees can have access to air during transportation.

SUPERING

Giving the bees additional honey supers provides them with more space. As a result, the colony is not overcrowded which reduces the need to swarm and allows more room for honey storage. Add more supers as needed throughout the season when the previous super is half to three-quarters full of capped honey.

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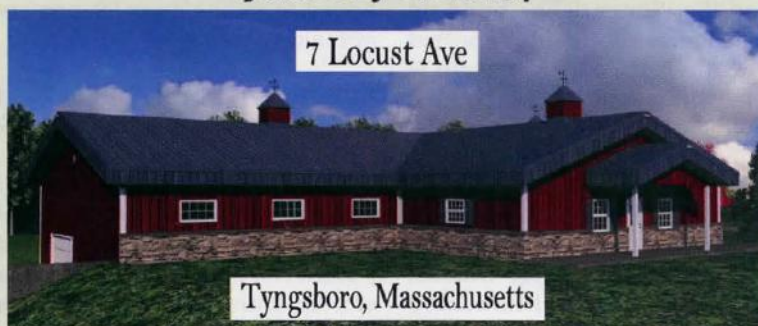
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DOWNTOWN

It's Harder For You, Urban Newbee

Toni Burnham

Samuel Ramsey And New Hope In The Fight Against Varroa

One thing you might hear about Samuel Ramsey, soon-to-be-Ph.D from the University of Maryland, is that he is a great speaker: during one talk, he proved that hungry ladybugs can bite by letting one chomp his arm. He won the international Three Minute Thesis Competition, beating over 1,000 other brilliant young scientists.

But this is what you *really* should know about the future Dr. Samuel Ramsey: his work represents one of those potential, “change everything” moments for which we have been longing since *Varroa destructor* began its relentless siege of honey bees.

To quote Sammy: “We’ve been thinking of these parasites as vampires when they’re actually more like werewolves. Maybe we’ve had so little success in killing them because we’ve been trying to drive a stake through something for which we needed a silver bullet.”

Ramsey’s work indicates that *Varroa* do not ingest hemolymph – the “blood”– of honey bees. They attack fat body tissue, an organ responsible for essential functions related to storing and releasing energy that the bee needs. We have been laboring under a critical misunderstanding of *the most basic interaction* between bees and the existential threat of over 40 years.

How is it to change received knowledge and be greeted with excitement?

“One concern is that when you tell people that something which they have believed for a long time is incorrect, often there is a tendency to get defensive, to feel offended that you would challenge things that way. It has been great to see that this really hasn’t gored anyone’s ox. People are seeing that the foundation of the earlier conclusion was not very sturdy.”

Was it actually explored? Did someone do an experiment with erroneous results?

Multiple studies were conducted in Russia in the 1970s and 80s. Remember, *Varroa destructor* is from Southeast Asia: when it started increasing its geographic range, it moved through China into

Russia, the first areas to be hit hard. Therefore, much of the earliest research is written in Cyrillic [which already presents an obstacle]. The studies at the time used a method which was then considered OK, but which is not up to current standards. Researchers used strontium isotopes and some other things that we tend not to use for these experiments because they don’t stay in the tissues where they are supposed to be!”

“They were not measuring what they thought that they were measuring. Another of the problems that came across was translation, as well.”

“Using these problematic results, they stated ‘*Varroa* are feeding on hemolymph.’ Many saw only that statement. When a paper is written in a language that isn’t translated into English often, sometimes the abstract [only] is translated: this particular abstract did not include enough detail to tell that the methods used were not solid.”

“Using the abstract, people began to cite this paper, stating ‘*Varroa* are feeding on hemolymph.’ No one really questioned this until Dennis vanEngelsdorp, Allen Cohen, Jerry Hayes and I started discussing it in more detail.”

“Allen Cohen, an insect diet expert, was the one who said, ‘I don’t think that organisms with fast reproductive rates are able to get all the nutrition they need just from hemolymph.’ Hemolymph is mostly water.”

“Consider: *Varroa* produce an egg that is more than 33% of their body volume. The egg is HUGE, and she does it every single day. To be able to put that much biochemical energy into an offspring of that size, you need a lot of very potent nutrition which you can’t get from a source that is mostly water.”

“It also fails to account for the osmoregulatory burden – to explain: if you drink a lot of water, you can overwhelm your body’s ability to drain it, and your cells will grow and actually burst. They are not able to deal with the influx. Insects and arachnids that feed on things that are mostly water have special changes to their digestive systems to allow them to do so without exploding. *Varroa* does not have *any* of these changes. That was my observation.”

“Allen Cohen said, ‘Maybe they are feeding on the muscles? Maybe they are feeding on the fat body? They have to be feeding on something that isn’t hemolymph.’”

↪

The Golden Years
Are Gone.

“That is what *really* got things going. Jerry Hayes had also thought of this, and mentioned it to Dennis vanEngelsdorp.”

Joining The UMD Lab.

“When I got to Dennis’ lab I was thinking, ‘If I am going to do a project now – it has to go somewhere. I don’t have time to start something and find that it doesn’t pan out.’”

“I love work that’s on insect behavior, parasite behavior, predator behavior. I’m very interested in the behavior of organisms, how they get their food, etc. But that particular project sounded very risky, because it’s going to be a binomial answer: Yes or No. People have believed this for a long time, and they probably had good reason.”

“I started looking through the literature, and it didn’t look like anybody was questioning it! My concern was that everyone cited earlier papers that said ‘*Varroa* feeds on hemolymph,’ but no one cited the original. As a researcher, you are supposed to cite the source that information comes from, not someone quoting someone...”

“I had to trace the chain back years and years. It took me months to find the original source. When I found it, I realized, ‘OK, there could be something here, because these methods don’t get you to the conclusion that everyone has been using.’”

It Was Personal.

“The part that often grabs people is that one reason for this project involves my Dad. I was considering three different projects, ‘Which one?’ I talked to my dad after only a small amount of research, and he said, ‘I don’t know what I am going to do about this gout thing. I don’t know what I can eat, what I can’t eat!’ It’s a painful joint problem he’d had for months: my dad would think that he’d figured it out, but would have another flare up.”

“Of course, he asks his scientist son for help to understand what gout is and how it causes problems. When I found that gout was related to purine crystals, a bell went off in my mind, ‘Wow, that’s weird! That’s what the *Varroa* mites use as their waste product!’”

“I started trying to figure out the source of the problem with purine crystals in his blood, causing painful arthritic friction. What source is it *that* high in purines?” [Note: purine is the name for the chemical group of which guanine is a part.]

“I thought, ‘If I can figure out what my dad *should* not be eating, I might be able to find out what these mites *are* eating.’ At the top of every list was *Don’t Eat Liver*. I thought, ‘Where is the bee’s liver?’ The equivalent in insects is the fat body. This is something Dr. Cohen had mentioned.”

“It’s hard to move forward by starting with a negative, ‘It’s not hemolymph.’ There are a lot of things that aren’t hemolymph. When the guanine, fat body connection

arose, I was surprised and found a paper that discusses the functions of the fat body in some detail, and a ton of other papers looking at the fat body. It is a *fascinating* organ! I learned that the fat body is the organ that creates guanine in insects. Pieces started to fall together.”

“That’s the story of how things started, and I am glad for the opportunity to tell it, because it’s helpful for people to know that science moves along, building on other researchers. One: when you fail to cite the original paper, it can end up being like the Telephone Game. That can create problems itself, but it also prevents people from seeing the original methods used to come to those conclusions. Most researchers probably wouldn’t have continued citing that paper if they had seen the methods. But they were citing people that they trusted.”

“It is also important to remember that science works as a conglomerate, we work together. Working with Jerry, Dennis, Allen, the other coauthors, I moved questions forward, and decided how things would be structured, but I could not possibly have done this without Dr. Cohen, without Ronald Ochoa, Gary Bauchan, and Connor Gulbranson.”

Bee Fat, Not Bee Blood.

I’m excited about this project specifically because the pathologies that are associated with *Varroa* have been all over the place. When I first started studying *Varroa*, I was overwhelmed by the sheer amount of negative consequences that it causes – early onset foraging, reduced overwintering success, reduced lifespan, viral transmission, difficulties with metabolic functions, ability to navigate properly – all of this stuff! It seemed strange that all of this could be related to the removal of a small amount of hemolymph.”

“It also reminds us not to discount how clever and important *Varroa* is. I have presented to a lot of researchers and beekeepers, and with many beekeepers there has been a disconnect. Researchers

say, ‘Yes, *Varroa* are very important creatures, reducing their populations is of the utmost importance.’ But beekeepers will often say, ‘Oh, that’s the lowest on my list. I never see *Varroa* in my colonies, if I see them it’s just a couple. Not a big deal.’ My research has helped to show that you are unlikely to see them, because the places where they are most likely to be are always going to be hidden if your bees are at any kind of natural standing or flying position. The image that we have of the mite conspicuously on the bee’s thorax is misleading because they spend so little of their lifecycle there. These [results] have been helpful, because when I explain this to beekeepers now, they say, ‘Why have I never heard this before?! I had no idea.’ It has helped people see that there is an important utility to tests and monitoring for mites aside from just opening colonies and looking.”

“It also makes the point that it is important to keep these populations low, because they perforate the *liver* of a bee. If I had a parasite on me that was the size of



my hand, that was sucking out parts of my liver, there is just no way that I would let that go on!"

"It has helped these beekeepers understand, 'I've gotta do something about this!' It has created an imperative to do something to reduce the population of these parasites. What is exciting is to have beekeepers come up and say, 'This [research] has changed the way I think about beekeeping.' Some of them have been keeping bees for years, for decades. I am a young guy, it is cool to hear people say that some work I have accomplished has helped change the paradigm on something they have been doing for decades."

Is *Varroa* Resistance Possible?

"When talking about breeding for resistant stock, I ask people to think about a 'genetic arms race' or an 'evolutionary arms race.'"

"People often use the term when talking about antibiotic resistance. Antibiotic resistance works like this: we have a weapon, a drug, and we want to use it to kill the bacterium. But the bacteria have very short generation [reproduction] times. They can reproduce very, very quickly, and in a day you can have hundreds of generations that have grown and divided, and it is crazy how quickly some of them can. [Like] an arms race, every time they mate and produce new offspring, there are choosing new weapons and new defenses to block the old antibiotics. Therefore, we need to constantly use new forms of antibiotics to treat these bacteria."

With *Varroa*, this time we have two different organisms facing off. It's not a drug, it's a *bee* that we are trying to breed to have a resistance to this mite. While the bee can get a leg up, the mite can get a leg up, too. One problem is that the bee's generation time is MUCH longer than the mite's. If we think of this as an arms race, every time that bee gets the chance to choose one weapon to use against *Varroa*, the mite has the opportunity to choose *several*."

"Over the course of a year, *Varroa destructor* may have nine generations, sometimes 12 or 14. That's a lot of weapons that they get to choose. The bee? Maybe one, just one opportunity to [mate and] create a new set of offspring. Sometimes we even stop that from happening: when we stop swarming from happening, stop the colony from splitting, you don't even have that opportunity for new genetic stock to present itself."

"I am not one who believes [in a system where] people breed resistance in their own bees by letting the mite populations get really high, and that the best will survive, the other ones won't – I don't believe that it is a good method, because the mites have a head start, and too many opportunities to continue building upon their current progress. Systems that researchers are currently using in the lab [that speed up honey bee generation time] – seem promising in some ways. But I don't think that it is a good idea to let your bees die in hopes that you will emerge with this new super bee. That is very unlikely. I think it takes a lot of work and genetic conditioning and time in the lab and generation time that won't happen out in the field."

"A good example is to look at what happened to the bees in the US. Within 10 years of the introduction of *Varroa destructor*, we've lost our feral honey bee colonies. Anything that wasn't managed, died out. All the diversity that the bees had was not able to stand

up to how quickly *Varroa* generation times are able to ratchet forward."

"I don't think that it is an option for us to let their [mite] populations spiral – I don't think that the permanent answer is constantly treating for *Varroa*. The amount of chemical input into the colonies currently is unsustainable. I think while we are figuring out what the answer is, we have to continue reducing their populations. It is not an option to just let them run wild."

"It is fair to say that breeding for survivor stock in the field is highly unlikely to yield a resistant bee because of the evolutionary arms race that is going on. In the field, we can't help the bee replicate at that speed."

In The Future.

"Options like RNA interference and approaches of that nature hold great potential to reduce the chemical input into the colonies. It won't get rid of it entirely, because we do need to make sure that we vary the ways used to reduce the populations of *Varroa* to prevent resistance."

"If we can introduce something that disrupts the reproductive cycle of the mites. They feed on the bees, they get sterilized, they go into a cell and try to produce offspring, and they don't. They die."

"Or perhaps an approach where, when the mites feed, it disrupts their ability to continue digesting their food. They stop feeding, they get sick, they die."

"These kinds of things are exciting, but in some way they are still science fiction because they have not reached a point yet where they are ready to be introduced."

"There is still the concern about the Law of Unintended Consequences when a particular technology is very new. We need to look at all of the different angles of how this could affect an organism before we introduce it into the market. At the moment I am ready to say that I am happy about the potential."

Looking Forward.

"I've had the opportunity to work with a lot of different groups of people. I tend not to do just one thing – I sing, I love music, I am an entertainer – work on doing weddings with some people – I have worked with a lot of groups of people! I am very involved with my church . . ."

"One thing is that beekeepers are some of the most caring, amicable, pleasant people whom I have ever worked with. Beekeepers and bee researchers are a tight-knit group. There is an excitement around research in bees."

"Few things make me more excited than seeing people who aren't researchers being so interested in research. It takes a lot of work and a lot of trust to create that partnership that we are seeing. Things like the BeeInformed Partnership that help make sure that information is disseminated – also people like Randy Oliver. This is something that I have never seen before, a partnership between the researchers and people who are not, but who are so interested in their work."

"I didn't start out as a honey bee researcher: I researched predators and parasites and their behavior. When I started researching *Varroa* behavior I would think of myself as primarily a parasite researcher. But I have become so enamored of the beekeepers and the bee researchers and this incredible partnership! People

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talk all the time about how research rarely gets across to the people it needs to reach: they have not paid enough attention to the beekeepers and the bee researchers, because they are wonderful and now I am hooked! I am hooked!"

"I want to use my knowledge of honey bees and honey bee parasites to benefit the beekeeping community and the bee research community. This has changed the way that I think about my own career going forward. Now I want to do research on bees, and do as much research on bee parasites as I can!"



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Let's Face It – We Can Remember Some Things Some Of The Time, But Not All Things All Of The Time.



Ann Harman

Spring is here! New beekeepers are just putting together their hives and awaiting the arrival of their bees. Those that began beekeeping last year are now entering the fun stage of producing their first honey crop.

Flowers are blooming – do you know which ones are bee forage? Drones are out and about – do you see any signs of swarm preparations? How are the queens doing? Do you remember which colony seemed to be a little slow getting started this Spring? Was it the one in the hive on the right? Or was that the one that . . . Are you keeping records?

Let's face it – we can remember some things some of the time but not all things all of the time. We do not open up our hives and inspect the colonies daily. That might help us remember but it certainly does not help the bees (too much disturbance). So keeping records is an important part of being a beekeeper. Is there only one way to keep records? No. Fortunately today there are many ways to keep records. You can try several or a combination to see what works best for you. As you progress in your beekeeping you may consider changing your methods.

First you need to select what is important to know and to follow. Some items will be on the health of the colony, others on general information. Time of year. Queens, marked or not. Food supplies. Brood pattern. *Varroa*. Small hive beetle. Signs of a disease. Temperament. Treatments. Think about what you look for when you open a hive, when you do something for the colony, and what your plans are for the next inspection. Think about what is seasonal, such as enough stores for Winter in your area of the country. Make your own list. Yes, you can modify it as you use it. If you make it too lengthy and complicated you

will probably abandon it after a few times. Keep it simple. Keep it organized. A beginning beekeeper will want more details than one who is experienced. Among those details, noted by a beginning beekeeper, can be a reminder for questions to be asked or something to look up in a book.

You can certainly add some information about weather and bee forage plants since they influence what your colonies need. If you are using certain treatments for *Varroa* you can add reminders about removal times. Do you need to take some tools or other items to the beeyard on your next visit? A note in your records will save you running back and forth for something forgotten. Well, that is provided you remembered to check your records before leaving for the beeyard. As you use your records, you will remember to read them before putting on your veil. You may actually find you can postpone your inspection for a few days or a week. Keep records only on colonies that have a problem? That won't work over time.

Once upon a time a beekeeper decided to record information on a small sheet of paper. Each hive would have its own piece of paper right on top of the inner cover. That sounds very handy – each hive held its own information. However bees are very tidy little insects. A piece of paper, even on the inner cover was “trash” and needed to be removed. The only way to do that was to shred the paper and carry it down and out the entrance. If you ever considered this plan of record keeping, the bees will let you know it doesn't work.

Some beekeepers have scribbled notes on the outside of a hive itself. Sometimes the notes would be scribbled on the top of the outer cover. That could be considered “permanent” until you need to

combine colonies. Now the “new” hive has “old” information on a hive body. That information is no longer relevant unless you just transfer the frames into a new hive body. Furthermore you have nothing to remind you to “bring feeder” the next visit to the beeyard. What happens if that particular hive part needs repair or a fresh coat of paint? Keeping records scribbled on the hive could get quite complicated.

However keeping records in a notebook is possible. It will travel back and forth from home to apiary and back home again. You can write down necessary information for the colonies, make a note which hive will need monitoring for swarm cells before other ones and if some seem to be short of food. You will have to review your notes before leaving for the beeyard or you will forget to bring the feeder and syrup.

If you wear gloves they will become sticky with propolis and wax. So will your fingers if you do not use gloves. Pages will get stuck together but can be separated without loss of information. So a notebook will work until the day you hastened indoors, leaving the notebook outside in a downpour. As you add colonies to your beeyard a single simple notebook will be outgrown. It can be outgrown even in one bee season. More notebooks? A ring notebook with different sections, one for each hive? That would work. Such projects can easily get out of control.

Then there is the Brick Method, also known as the Rock Method. Here you must create your own dictionary with either one or two ordinary bricks or with rocks. Those are handy – they form a weight on the outer cover to keep it from blowing off in a high wind. An example from a “dictionary” would be a single brick laid flat, sides parallel with the rectangular shape of the telescoping

cover means "all is well." A brick standing upright could mean "a serious problem" (queenless or needs feed immediately or whatever meaning you create). The Brick Method has its limits but can be handy to indicate something simple such as the hive you just requeened, and you wish to check it in a few days.

You can put your cell phone, with its assorted capabilities, and your computer to use. Fortunately your computer, living inside your house, is protected from propolis, wax, honey-sticky fingers and rainstorms. Taking your cell phone to the beeyard does expose it to dangers from sticky substances, getting dropped inside a hive, getting dropped outside a hive and getting stepped on, and maybe even getting trapped in a hive because you were not paying attention when reassembling a hive. However being able to photo a hive inhabitant and having it identified as NOT a small hive beetle makes a cell phone a handy beekeeping tool. It speaks to your computer so that you can construct how you want your information arranged. Keep in mind that you want a way to have reminders to take things to the beeyard next time (which could be a week away) or to make and bring more syrup to a certain hive in a few days.

You can very easily step from the Brick Age into the Electronic Age today. Yes, you can set up something on your computer but it just may take some time and you may find your initial plan keeps getting reorganized until it settles down to just what you want. You can certainly start from scratch. However, when you have a bit of time just Google this term in your computer: beekeeping records. Take a cup of coffee and a snack with you because you may well spend hours reading and looking at all the suggestions.

You will see general information, templates that you can try or modify for your needs and much discussion on how to keep records. One thing is quite obvious – it is necessary to keep records that will help your beekeeping. Do you see anything useful? If so, give it a try. A good template will increase your observations when opening a hive.

Now the next term for you to investigate on-line would be: beekeeping software. Get another cup of coffee and snack so that you can spend some time investigating the various ones offered today. Some of these will give you a free trial. Go ahead and take advantage of a free trial so that you can decide whether this method of keeping records is what you want to do. Having software, such as HiveTracks, may be the best way to start keeping records for new beekeepers in their first few years. Starting out with bees will seem to have so much to consider when opening a hive that guidance will be like having a mentor with you. Software is usually updated from time to time, reflecting the feedback beekeepers give. This updating does keep beekeepers up with the times.

Yes, there is still one more way to keep records. Yes, still another cup of coffee and snack. Here are the terms to use: beehive monitoring. In a sense this monitoring is not so much as record keeping as it is keeping track of what is going on inside the hive itself. The internet is filled with monitoring systems and equipment, both domestic and foreign. They are constantly being improved

Equipment – to use a monitoring system, a beekeeper will have to obtain an assortment of in hive monitors, generally for hive weight, in hive and outside temperature

and humidity. Some have an acoustic sensor for the sounds being made. Commercial pollinators may well appreciate some systems with anti-theft equipment.

Each system of monitoring will have its own way of reporting the data it is continually collecting. In general what the beekeeper is guided to do is up to the beekeeper. For example, a sudden weight loss during a nice sunny day in Spring could mean a swarm has just left the hive. It is possible that it bivouacked near the beeyard and now can be captured. On the other hand, what else could cause a significant sudden drop in weight?

Suppose that colony did swarm. Can a beginning beekeeper now realize what has happened to the original colony? Were queen cells on the bottom bar seen? What will be the progress of this left-behind colony? Such questions really cannot be answered by looking at a computer. However, keeping a record of that swarm time can make a beekeeper more watchful of swarm cells the following year.

The bees themselves make wonderful teachers. Actions, such as requeening a colony, cannot be done electronically – they require the beekeeper's eyes and hands. Watching a queen busily laying eggs, or a worker chewing her way out of her cell are beekeeping scenes that all beekeepers enjoy. The lives of bees can only be truly seen by opening a hive.



The advertisement features a yellow background. At the top, the logo for "Superior Bee" is displayed, with "Superior" in a script font, "S" in a hexagon, "B" in a hexagon, and "Bee" in a script font with a bee illustration. Below the logo is a photograph of two stacks of white polystyrene beehives. The left stack is labeled "6 Frame \$54.95" and the right stack is labeled "10 Frame \$64.95". A white box with red text reads "Polystyrene Bee Hives". A black box with white text provides the address: "Superior Bee 8300 Green Valley Road Mt. Vernon, OH 43050". Below the address, it says "Made in USA — full line of supplies". At the bottom, it states "2" thick wall with R8 insulation value!". The toll-free number "844-260-2015" and business number "937-464-4422" are listed, along with the slogan "The next generation of hive ware" and the email address "superiorbees@gmail.com".

New Beekeepers:

Be Prepared *Before* You Ask For Help

Frank Mortimer

Beekeeping is a hobby that requires the beekeeper to have a certain amount of knowledge and also possess the tenacity to do what is necessary to make sure he has a firm understanding of what's happening in his hives. Success in beekeeping requires full and active participation; it's not something that can be done from the sidelines, or with just a vague basic belief of what might be happening.

It is every beekeeper's responsibility to have a thorough understanding of what is happening in each of his or her hives. Saying that, I can't help but remember an experience that taught me the value of being a prepared beekeeper.



Years ago, I bought an old house that was a real fixer-upper. I didn't have any experience or knowledge about the work that was needed, but I was determined to do most of the work myself. One of the first things I did was to replace the upstairs' bathroom fixtures and vanity. I had purchased the vanity, faucet, and shower head before I even closed on the house, as I thought they were the perfect complement to my soon-to-be renovated bathroom. Once I started replacing the vanity, I realized I was missing a lot of stuff,

namely the correct tools, and the right replacement pipes to get the job done.

Luckily, there was an excellent local hardware store a mile down the road, so one Saturday morning I drove down to get what I needed. Over in the plumbing section, there was a gentleman helping another customer with his plumbing issue. I didn't quite know what they were talking about; other than I knew it was about plumbing, and what was the best way to get the job done. (Apparently there was more than one way to approach the job, and they were discussing the varying approaches.) Based on the conversation I was listening to, I

knew this guy knew plumbing and that he could help me.

I introduced myself to the plumbing expert and preceded to explain my situation, using my hands to show the shapes of pipes I needed. After about two minutes of me trying to explain what I needed, the expert finally stopped me and said, "I have no idea what you're talking about." I was shocked! I just heard him offer expert advice to someone else and now he was telling me that he didn't even understand what I was saying. He then said, "What are your

measurements?" and, "What size fittings do you need for this job?" I told him that I didn't know, and that I hadn't measured anything. This was my first lesson in how to speak with an expert: use details that are commonly used by experts, such as precise measurements and the names of actual plumbing parts.

I was determined to show him that I was not going to quit until I got the job done, and at one point, I even brought my faucet and pipes in a box to the hardware store so that the expert could show me how to sort them out.

That day it took me four trips to the hardware store and a lot of tenacity, but I finally learned how to communicate with the plumbing expert and earn some respect. I shook his hand, said thank you for the plumbing lesson and headed home with everything I needed to get the job done. Since I had all the information and supplies I needed, when I got home that last time, I was able to install my new bathroom faucet in "This Old House" record time.

The plumbing expert taught me, a first-time homeowner, how to approach a job and what I needed to know so I could get it done right. That day-long lesson taught me the importance of providing an expert with information he or she needs to be able to help.

So, what does my plumbing story have to do with beekeeping?

Everything. . .

Experienced beekeepers, mentors, and club officers are always available to help, but any real help first requires that the beekeeper also does his or her part. Specifically, a beekeeper should answer these questions every time he or she goes into his or her hives:

- 1) Did I see the queen?
- 2) Did I see signs of the queen, specifically:
 - Capped Brood?
 - Larvae?
 - Eggs?



- 3) How many frames of brood did I see?
- 4) How much honey/nectar do the bees have?
- 5) Did I see anything weird?
 - Swarm cells?
 - Pests?
 - Lack of bees?

If you can answer these five questions, then you have done your part. You might still have a lot of questions, and you might not know what to do next, but if you can answer these five questions, then based on the details about your hive, another beekeeper can offer you advice on what to do.

If you're not sure how to tell the difference between capped brood and honey, then pick-up a book on beekeeping so you know what to look for. There are dozens of excellent books on beekeeping, many aimed specifically at when you are just starting out. There are also many great resources you can rely on, like the magazine you are currently reading, locally prepared manuals, or even your bee club's newsletters. Online, there are lots of photos, illustrations, and videos that you can view to gain a better of understanding of what's happening inside your hive. (However, like everything else on-line, make sure your information is from a reputable source or trusted beekeeper so you know that the information you are relying on is accurate and based on facts.)

Additionally, that's why it's so important for you to do a thorough inspection of your hives before asking for help. Being a beekeeper means going into your hives, pulling out at a minimum four to six frames per box so that you can answer those five questions. Also, you have to look at the frames, not at the bees, which means if "there are too many bees in the way", then you have to move them out of the way to see what's in the cells on that frame.

Beekeeping is a real passion for most people who have been keeping bees for a while. There is a meme going around that says, "I don't always talk about bees, sometimes I'm asleep" and I do think that sums up how I feel and the passion one gets for beekeeping. Every time you open a hive and see your bees doing what you want them to be doing, and your hive growing as it should be growing, it only adds more fire to that passion. For most of us, it is a passion for beekeeping – successfully – and the desire to see bees flourish, that drives beekeepers to want to help new beekeepers. The more experienced beekeepers you meet, the more you'll hear a common theme to their advice: You can only learn by going into your hives, looking for signs that the colony is in good shape, and knowing when something doesn't look right.

You'll also notice that most beekeepers are quick to want to help. I think it's the nurturing nature of a beekeeper that's at the root of wanting to help others. But always keep in mind that an expert's help is only as good as the details he has to work with, and without details, an expert doesn't have what he needs to help. The thing to remember is that help comes in many different lessons and takes on a lot of different forms. It takes experience and a good teacher to know the best way to teach someone who is still learning the basics. A good teacher will let the student be the one who goes into the hive, because the student will learn more by doing it himself than by passively watching someone else do the work for him. The teacher is available to answer questions, and help the student when he gets stuck or doesn't know what to do next, but the student must always do his part first, gather information from the hive, then ask questions based on the details of what he has seen firsthand. That's the lesson I learned from my fixer-upper house with plumbing problems. Sometimes the best way to truly help someone is to teach him that it's his responsibility to first be prepared with all the necessary details before approaching someone else for advice or guidance.



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Spring Feeding

Ross Conrad

The end of Winter and early Spring is the most challenging time for a honey bee colony. Food supplies tend to be running out and the bee population is often at the lowest point of the year. Meanwhile temperatures (especially in Northern regions) are typically too cold for the bees to be able to forage effectively. The cool temperatures also mean that precious hive resources can be easily used up keeping the brood nest warm. Even on those days when the weather warms up enough to make foraging possible, there are no flowers available to forage on early on. As a result, this is the time of year when colonies tend to be most vulnerable to starvation. Experience in New England has proven that if the bees don't have the equivalent of at least two to three deep frames full of capped honey located next to the cluster, the bees are at risk.

A helping hand

The easiest way to assist a colony facing starvation in late Winter is to move frames of capped honey from the outside edges of the hive over so that they are next to the cluster of hungry bees. It is important that the honey to be within the clustering bees' reach, but does not break up the cluster by positioning a frame of capped honey in the middle of the brood area. Doing so will break up the brood nest and make it more difficult for the colony to maintain optimum brood temperatures and threaten brood viability.

The next best way to assist a colony near starvation is to add some frames of honey to the hive. Some beekeepers will keep spare frames of capped honey in their freezer for just such a purpose. Others will use

honey left behind in a neighboring hive that has already expired. While it is critical that additional frames of honey always be placed directly adjacent to, or above the cluster so that the bees can reach the food source easily, it is also important that the colony from where the honey is taken is a healthy. If the donor colony is not free of disease, pathogens could end up being fed to the bees sealing their fate.

Syrup feeding

Frames of honey are not always going to be available and in those cases, sugar syrup is the next best thing to use as feed. Fairly inexpensive and readily available, the feeding of syrup will take more time and labor than feeding frames of honey.

It is a common recommendation to feed bees a syrup made of one part sugar to one part water at this time of year in order to stimulate brood production. However, since we are feeding the colony because it is experiencing nutritional stress, it is a better idea to get as much food into the hive as quickly as possible and therefore, use syrup that is around two parts sugar to one part water.

An easy way to do this is to simply fill the feeder with sugar and note where it comes up to in the feeder. Then add warm water and mix to dissolve the sugar until the syrup level is back to same level that the dried sugar was filled to.

Consider the sugar type

During the coldest part of Winter, feeding fondant is preferred so as to introduce a minimum of moisture into the hive. By late Winter and early Spring however, syrup can be used and is preferred since the bees can store it in the comb. When choosing what type of sugar to use to make syrup, consider only using cane sugar to feed your bees. About 90 percent of all non-cane sugar is manufactured from sugar beets that are genetically engineered to produce a toxic pesticide in every cell of the plant. By sticking to cane sugar, you eliminate adding these toxins into your colony's diet and remove any potential impact that they might have on the bees. Do not use brown sugar. White sugar has all the constituents indigestible to the bees removed and therefore will not aggravate elimination issues that

may arise when the bees are cooped up in the hive for long periods of time due to cold weather and are unable to go on cleansing flights.

When there are many colonies to feed, there is a strong temptation to feed high fructose corn syrup. Pre-made syrup can be less expensive than granulated sugar, and will save on the labor of converting granulated sugar into syrup. Be forewarned, HFCS contains sugars mildly toxic to bees. Additionally, if the corn syrup has been exposed to high temperatures



Using an entrance reducer to cut down the size of the hive entrance as shown on this top bar hive, goes a long way in helping to prevent robbing in the bee yard.

(such as sitting in a tanker truck in the sun for an extended period of time) an additional toxic compound, Hydroxymethylfurfural (HMF) is produced that is also toxic to bees and therefore caution is advised.

White sugar is pure carbohydrate with all the enzymes, vitamins and minerals removed. As a result, some beekeepers take the advice of the father of biodynamic agriculture, Rudolph Steiner, and add a pinch of natural sea salt to the sugar and replace some of the water used to dissolve the sugar with tea made from thyme or chamomile. This is a way to add back some of those micro-nutrients and make the sugar syrup a bit more like real nectar and hopefully, healthier for the bees.

Feed stimulants

Since white sugar is pure carbohydrate and has had all the micro nutrient that were originally in the sugar cane removed, it lacks a significant odor. For this reason, a feed stimulant is often used to encourage faster uptake of the syrup by the colony. The most commonly used feeding stimulants sold by various companies nationally are composed of a mixture of emulsified lemongrass and spearmint essential oils that impart a strong and inviting smell to the sugar syrup in order to grab the colony's attention. These essential oils have powerful antimicrobial properties that will not only help prevent mold from growing in the syrup, but have also been associated with reducing colony diseases and helping to improve colony health.

When to stop feeding

Spring feeding should continue until the first major honey flow begins. In most northern regions the honey flow will tend to coincide with the dandelion bloom, but this may differ in southern or western areas. If for some

reason you do not see the flowers in bloom, the bees will let you know that the honey flow has started as they will greatly reduce – or even stop – feeding at the feeder in preference for foraging on the fresh nectar and pollen that has become available.

In all cases, feeding must stop prior to placing honey supers on the hive that are intended for harvesting. To continue to feed a colony when honey supers are in place will compromise the integrity of the honey harvest and detract from the natural flavor and quality of the honey that is produced by the bees from nectar.

Entrance Reducers

If the colony has come through Winter with only a few frames of bees, it is a good idea to remove the extra supers that are on the hive and not occupied by the bees. The size of the entrance to the hive should also be reduced at this time. This advice is especially important when feeding bees and essential when using a strong smelling feed stimulant. The smell of the syrup is likely to attract the attention of other bees in the area and can trigger a robbing event if the entrance is not reduced. Colonies that are victims of robbing can be severely weakened as bees die defending their hive, and in extreme cases, colonies can be robbed out so badly they starve to death.

Another important way to reduce robbing is to be sure not to spill bee feed in the bee yard. This is especially important when using an essential oil feed stimulant that imparts a strong scent to the feed.

By staying on top of your bee's dietary needs at this critical time of year, you help to ensure that the colonies in your care survive the Winter well, instead of starving right before Spring arrives.

Ross Conrad is the author of Natural Beekeeping. He will be teaching an Organic Beekeeping for Beginners class Saturday and Sunday, May 18-19 in Lincoln, Vermont. For more information or to register contact Ross at: dancingbhoney@gmail.com or call 802-349-4279



A large cluster of dead bees with no honey in the hive in early spring (as pictured here) indicates that the bees were healthy but did not have enough food to survive the winter dearth.

Cooking With Honey

Ann Harman

At this time of year the bees are very busy visiting an assortment of flowers for their nectar and pollen. Depending on where you live you can go out and visit some flowers also but you will use these flowers in fixing your meals. Flowers can be used in salads, in hot dishes, in sauces and desserts.

Flowers that bloom during this period of time include apple, elderberry, honeysuckle, garden peas, plum, redbud, roses, violets, pansies, and, of course, dandelions. Other edible plants will have blooms in the Summer months and some into Autumn. Dandelions are actually a very versatile plant. The young tender green leaves have been used for centuries as an early green vegetable. The blossoms can be used to make delicious fritters or jelly and even dandelion wine.

Recipes can be found online but be certain to use the term “edible flowers” or you will end up finding “recipes” for floral arrangements. Cookbooks using flowers can be difficult to find. Sometimes such cookbooks will be found on the secondhand market.

You will want to gather your flowers from areas that have not been sprayed with anything. Also do not collect along roadsides. Since you will be eating these flowers you want them free of contamination. You certainly can grow quite a number of them, such as marigold and nasturtium, in your own garden. Since flowering will occur at different times throughout the growing season, a garden salad will be quite different with the season. Here’s a couple of recipes to get you started.

MUDD’S HONEY MUSTARD VINAIGRETTE

1/2 cup honey
1/8 cup Dijon mustard
1/8 cup whole grain mustard
1/2 cup wine vinegar
Juice of 1 lemon
1 egg yolk
1 tablespoon thyme, chopped
1-1/2 cups safflower oil
1 cup olive oil

Combine first seven ingredients in blender or processor. Gradually add oils. Season with salt and pepper to taste.

GARDEN SALAD WITH EDIBLE FLOWER PETALS

6 cups mixed greens broken into bite-sized pieces
4 tablespoons mixed edible flower petals
6 fresh button mushrooms, sliced
4 teaspoons grated Parmesan cheese

Toss greens with the vinaigrette dressing. Put greens on individual plates. Garnish each with flower petals, mushroom slices and Parmesan cheese. Serves six.

Both recipes from Mudd’s Restaurant



Just as the honey bees find different flavors in the nectar they collect, you will find quite a range of flavors in the blossoms: Nasturtiums are spicy, chives will be oniony. Squash blossoms and day lily buds are vegetal in flavor; calendula is bitter but pansy and mint are minty. Marigold has herbal flavor and rose petals are floral. Enjoy the different flavors and the colorful additions to your foods. 🐝