Bee Culture

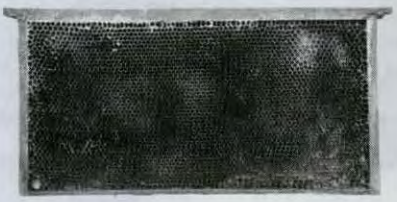
FEBRUARY 1994

MEET·JEFF·PAINTER
The·Honey·Comb·Kid

P · L · U · S

Febru

COLUMNS



DEPARTMENTS

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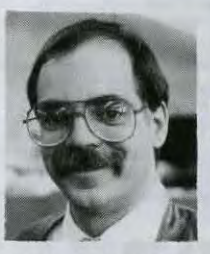
Publisher



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VOL 122 NO 2

ary '94

FEATURES

Cover
Getting kids involved with bees doesn't always start with bees. Sometimes you start at a more basic level.

INNER·COVER

Nature Centers; ITC

Have you ever been to a nature center? You know the place, right on the edge of town. Usually a converted something or other building, full of displays and specimens and things that get you a little closer to where we came from. Outside there's a garden, or two or three. Often there's a trail of some kind that goes by all sorts of neat things to look at and touch and see and smell.

Inside, the people who keep it going are a special breed. Lots of volunteers keep showing up, a few hours (or lots of hours) a week, every week. Some are non-nature specialists – stock brokers, math teachers, college students – but they have a 'nature' skill or hobby or passion they absolutely must share, and have no where else to go.

The staff, the paid staff, are usually outnumbered by the volunteers, but manage to keep things under control. Or nearly so anyway. They do the planning and the worrying and the scheduling, and the regular stuff that needs to get done to keep on keepin' on.

Funding? Some, the lucky ones, have a deep pocket somewhere in the background who wants this sort of thing to happen but likes the background. Others, probably most others, need to work a little harder for new equipment and displays and salaries and heat and promotions and all the other things needed to keep a Nature Center, well, natural.

Besides the obligatory displays of local flora and fauna and minerals and maps, nearly every one of these places has an observation hive of some kind. Most tend toward the standard model – three or four frames high, one frame deep, glass (or plastic) on both sides all sitting on a revolving stand with an exit through the base. You've seen a thousand of them. A few are more elaborate, more complicated . more expensive. But no matter how plain or fancy on the outside, behind those glass walls, for anybody who wants to see, lies the inner workings of the fascinating world of the honey bee.

Which brings me to Jeff Greenwood.

Jeff has been working at White Memorial Conservation Center in Litchfield, CT for more years than I remember. With a degree in Natural Science from the University of Massachusetts and a stint at teaching in Colorado he came to this center well grounded in the basics. But like most who devote their lives to passions rather than profit, he came equipped with the dedication to share what he knows, so others can know, too.

Jeff's a whiz when it comes to birds and plants and programs for kids. But he is also in charge of the resident observation hive. And, by his own admission, keeping bees is not his forté. He's not bad, but, well, he's a lot better with hawks and owls and oak trees than bees.

He's got the basics down though. He has to, he teaches groups – school kids and parents and all the curious about what goes on behind those thin glass walls. He knows the biology and the seasonal cycle of the colony, he knows the parts of the hive and the rest. He's a teacher. The best kind of teacher – he likes what he does, and more importantly is still as intrigued by what he teaches as are those who come to listen. White Memorial is lucky to have him.

Which brings me to why I share this with you.

Like Jeff, most Nature Centers have good people, both paid and volunteers, that make them work. Most have some special skill that they focus on, while others tend toward the general, just glad to be part of the experience.

Hardly any have beekeepers. Some do. In fact some are blessed with beekeepers. But most don't. Which is where you come in.

Nature Centers are without doubt the best experience the public can have with bees, and beekeeping. A

Continued on Page 113

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NEXT MONTH

We are *very* pleased to announce the return of the 'Old Timer' next month. After a too-long break he brings another tale of bees, beekeeping and everyday life in the wilds of British Columbia. Welcome back! Like most, we hope the next 'vacation' will not be as long.

But spring, summer and all the get-ready business of next season is certainly on the front burner next month, and we've two articles that will help you 'Get Ready'

First, there's the second part of Marla Spivak's 'Two Queen Horizontal' system that works so well in Minnesota and several northern climates. Her first piece, inside this month gets you started by putting packages in, in the snow. Sounds strange but you can't beat success.

Second, our Michigan correspondent relates the next part of his story on a just-starters first season. Not without problems, his solutions, and the logic behind them will fit in nearly anybody's backyard.

Finally, we introduce a new regular contributor next month, Dr. Mark Winston, from Simon Fraser College in Burnaby, British Columbia. Mark got his start with Dr. Orley Taylor in Kansas, and spent some considerable time in South America studying Africanized honey bees. From there he went to Canada and has established a very successful research program in Simon Fraser. His focus so far has been on several aspects of honey bee biology, and it is this field his graduate students pursue.

In his spare time he has authored two best selling books – "Honey Bee Biology," and "Killer Bees," two subjects he is very familiar with.

Mark brings a rather unique perspective to the pages of *Bee Culture* – African honey bees, bee biology, beekeeping extension and a certain Canadian outlook that's always interesting.

Tune in Next Month for all of this, plus Mark Winston's first contribution to *Bee Culture*, The Magazine of American Beekeeping!

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■ Let Them Eat Their Honey!

Arizona beekeeper Jim Smith recently suggested that if everyone in China ate a teaspoon of honey annually, there might not be any Chinese honey to export and that there should be some way of making China develop it's home market. Jim has a good point. In today's free trade climate, getting an effective tariff on Chinese honey may be a difficult task, but tying exports to a home country's use of a commodity might be doable: "No country could export an agricultural commodity to the U.S. unless it's per capita consumption was (some set %) of U.S. per capita consumption."

Such a restriction could be beneficial to China rather than punitive, since it would force China to develop it's home market. Who knows, maybe we would wind up exporting honey to China!

Joe Traynor, Mgr.
Scientific Ag Co.

■ O.B.'s Tops, & Bottoms – Revised

It was with sadness that I read about O.B. Wiser's passing in the September issue of *Bee Culture*. It also cleared up a mystery.

Last January I wrote to you about O.B. Wiser's article "Tops and Bottoms" in the November 1992 issue of *Bee Culture*. When I tried to make plans from which to build a new top, I found there was a problem with the dimensions. I made what I thought were appropriate changes to some dimensions on the plans, and enclosed copies of the plans with the letter. You sent everything to O.B. Wiser.

He replied with a very nice letter making the corrections and pointing out that I had made a mistake in the width of the hive body. He also asked if I would make drawings for him to go with articles he was writing. I immediately replied and said I would be delighted to prepare drawings for his articles.

He never replied. Two months later, I wrote again, but got no answer. My wife and I drove across the continent this past summer and went through Salt Lake City in August. I tried to contact O.B. Wiser by telephone, but there was no listing for him.

When we returned home in September, it was my wife who first saw the piece about O.B. Wiser under "Inner Cover."

I have only been a reader of your excellent *Bee Culture* for about a year and a half, but have read and enjoyed all of O.B. Wiser's articles during that period.

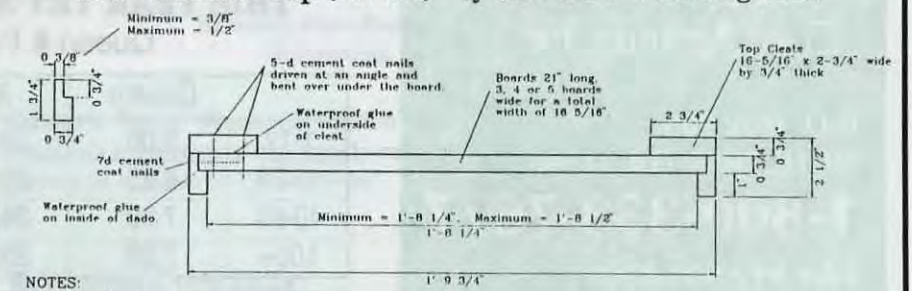
I read in a recent issue of *Bee Culture* that someone else had trouble with the dimensions given in "Tops and Bottoms" Here is a copy of the plans of the Ultimate Top and Ultimate Bottom with the dimensions corrected, as per O.B. Wiser.

If it is possible, please pass on my condolences to O.B. Wiser's family.

H.D. Lightfoot
Baie d'Urfe, QC Canada

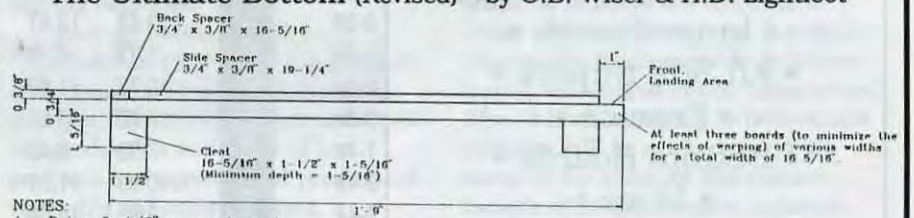
Editor's Note: Thank you for sharing your drawings, and your thoughts.

The Ultimate Top (Revised) – by O.B. Wiser & H.D. Lightfoot



NOTES:
1. The cleats are to cover the joint between the ends and the top boards to prevent water getting to the ends of the top boards.
2. Paint with 2 coats of latex paint.
3. If covering with aluminum, do not extend the metal under the cleat. Metal under the cleat will accelerate rotting of the wood.

The Ultimate Bottom (Revised) – by O.B. Wiser & H.D. Lightfoot



NOTES:
1. Drive 2-1/2" cement coat nails at an angle (for better holding).
2. Use 1" nails for Spacers.
3. The 1" wide landing area is sufficient width for the bees to land on.

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■ Kids!

Your reply to Miles Raymond of Olathe, KS in the December 1993 issue was very interesting.

While I agree with your observation that such information "needs to be available to those 10 years old and up if our ranks are to be replenished," I disagree with the statements that negate this idea. Especially do I disagree with the argumentative assumption:

a) the audience is not large enough

b) there is a very limited number of users, and that because of this:

c) the effort is not worthwhile.

"We have investigated " and "Our research tends to show. " used without corroboration, seems specious. To be fair you must admit that the sampling of children and users must have been somewhat limited. Perhaps if we had the names of the researchers and investigators we readers might find your assumptions more palatable.

The brotherhood of beekeepers is greater than you imagine. Members of our extended family include friends and acquaintances, sons and daughters, nieces and nephews, and other youngsters that fall through the cracks in today's complex familial relationships. This is arguably a large young audience; a readership with nothing to read. Who addresses this audience now? My "research" shows that there are few writers with either the skill or the drive to try. So, it comes as no surprise that investigation uncovers the fact that the readership is small there is nothing out there for them to read! You cannot read a non-existent article!

Will they all become beekeepers? I doubt it. Will they all subscribe to *Bee Culture*? I doubt it. Still, some of them might do both. Some of them might even grow up to solve the problems facing the beekeeping and honey-producing industry. But some of them will solve more pressing problems on this planet. Does that make "the effort worthwhile?"

Not everyone has a beekeeper-friend to turn to for advice as some fortunate ones might. Children need to satisfy their curiosity and Mr. Raymond is not the only one who needs something "to teach from." Researchers and investigators bedamned! Youngsters have the interest and curiosity and *Bee Culture* magazine is available to every one of them in our libraries. What other publication can do the job? We have an opportunity to influence the future. Can we afford to pass it up?

Vince Doyle
Cowichan Bay, B.C. Canada

Editor's Note: We have received several comments to the response to that letter, all in a similar vein, but none as well stated as this. To his credit, Mr. Doyle has the skill, and the patience to address, in a readable style and appropriate level, the audience mentioned. His first article appears this month.

■ Appreciates Article

North Carolina beekeepers

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appreciate the article, "Meet Bob Cole", by Dewey Caron, September 1993 issue of *Bee Culture*, pp. 501-502, and they have a right to be proud that one of their native sons has been honored in many wide circles for his meritorious achievements in beekeeping. There is no doubt Bob Cole is a consecrated beekeeper.

NC State Beekeepers Association honored him as the **1986 NCSBA Person of The Year** and noted with interest that he entered the Eastern Apicultural Society's Master Beekeeper program in August 1981 and passed all the exams on the first try. He has served NCSBA as a Director and as a regional Representative. However, we must affirm that Bob has never taken the North Carolina Master Beekeeper exams and he is not a NCSBA certified Master Beekeeper. Nevertheless, as stated, we are proud of him and perhaps one day NCSBA will be privileged to further honor him with a NC Master Beekeeper medallion. We wish both Bob and Susan the very best.

Irvin E. Rackley, President
NC State Beekeepers Assn.

Editor's Note: We apologize for the confusion. The information was included erroneously because of an editing error.

■ Genetic Improvement Needed

We beekeepers have for some time had to cope with the brood diseases and more recently the two mites that have so damaged both managed colonies and the feral bee population. We must now face up to the threat of the Africanized honey bee. With the passing of Miticur we are left with few chemicals for responding to the offending agents. Chemical treatments appear at best to be only stop-gap measures, with the ultimate solution resting in genetics (long term nature's way). Genetics also appears to be the only solution to the threat from the AHB.

Developing desirable strains of bees and producing the resulting breeder and production queens may not be easy, but maintaining these desirable strains out in the real world seems equally as difficult. Honey producers either discourage the production of drones in the apiary or ignore them entirely. Supercedure or swarm-produced queens from desirable stock will mate with whatever drones are available in the area, resulting in dilution of desirable traits. Maintaining improved American honey bees can only be achieved by improving feral colonies.

Why not encourage all beekeepers to requeen frequently with improved strains and furnish each requeened colony with a frame of drone foundation? Would any supplier be willing to produce drone foundation?

Perhaps a GENETIC IMPROVEMENT ASSOCIATION could be formed to encourage more requeening with better stock, production of greater numbers of desirable strain stock resulting in economy of scale with associated price reduction and the production of improved drones by beekeepers at large.

Maybe you could approach some of the professionals to determine if any of these proposals are feasible or effective?

Kenneth Beauchamp
Springfield, IL

Editor's Note: Drone foundation is available from several bee supply companies on request or special order.

■ Wants Contacts

I'm a beekeeper from Bulgaria. My name is Stoian Ivanov Stoianov. I'm 41 years old. I've been a beekeeper for 17 years. At this moment I have 100 hives and my intentions are their number to increase. I practice moving bees also.

I set up beekeeping firm "Prashets" in 1990 when the political and economic situation in Bulgaria changed. Its activity is connected with the production and trade of bee products and agricultural products of vegetable and animal origin.

I have a great desire to know beekeepers from U.S.A. I'm interested in all new things in beekeeping.

If it is possible, publish in your magazine my address and my desire to know other colleagues and have contact with them.

I will be very thankful and obliged to you, if you can do this.

Stoian Ivanov Stoianov.
Bulgarien
Jambol-8600
Zar Assen-str4
Bienenfirm "Praschetz"

■ Cell Door, Almost

I read the article "Cell Door" in your Dec. 93 issue with interest.

When attempting to build the door from the plans I found some problems.

1. I believe the pine stock in this list of materials should be 1-1/2" thick not 3/4" for parts A,B,C, & E.

2. Also the author calls for a groove centerer for door – however the groove must be 3/8" from excluder (both for guillotine effect and to accommodate part D). This would leave less than 1/4" (with 1/8" slot) centerer for bees when the door is in. I think the stock should be at least 1" The photo on page 654 looks like 1-1/4" stock.

I hope you can set me straight.

Gary S. Reuter
St. Paul, MN

Editor's Note: We've sent your query to the author but you seem to have already solved the problem. The bee space *is* necessary.

■ Arizona Pollination

Responses to my article on Pollination of Crops in Arizona, published in the December 1993 issue of *Bee Culture*, indicate that farmers and apiarists in some sections of Arizona give the cotton farmers honey to allow them to bring the bees onto their fields when the cotton is blooming. I am using a letter to the editor to indicate the response of those who say this is true. Hopefully, this means the insecticide problems have been worked out in those areas; if so, it is encouraging to believe this problem will be worked out in all areas of the state for the mutual benefit of cotton farmers, apiarists, and the general public.

A good cross section of apiarists around the state, many of whom indicated they trucked their bees

Continued on Next Page

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across county borders to pollinate crops in other counties, were interviewed for the article and none I interviewed about the pollination of cotton fields stated other than related in my article. I am taking the opportunity of a letter to the editor to let the readers know that some apiarists take exception to the amount paid per colony in cotton fields and state vehemently that cotton fields definitely need pollination.

Gladys Jenkins Bennett
Queen Creek, AZ

■ Jar Tags

Richard Bonney's idea using Jar Tags is a great one. I use a similar "Neck Tag" (literally) on Honey Bears that I give to my friends and neighbors. I use the tags because I do not want to glue labels on to a squeeze bottle, and since I do not sell these, there is no problem. My tags are printed on one side only to prevent registration problems of two sided printing (I do my own printing on a laser printer). Because of this, to get four pages the tags I use are double folded.

In the same article Mr. Bonney gives us four samples of recipes. I like these, and would like to use them to make up tags like those described in his article. The problem that I see is that your magazine is copyrighted and therefore, the recipes are copyrighted. The first question, therefore, is: do I (we the readers) have the right to copy, print and distribute these recipes? Do we need written permission from you the publisher and/or Mr. Bonney? What if I decided to sell these tags to my fellow apiarists?

Maybe we need an article about copyright laws to educate us all.

Jüri Volmer
Beavercreek, OH

Editor's Note: You should contact Mr. Bonney directly at: Dept. of Entomology, U of MA, Amherst, MA 01003, since he is the 'originator' of the recipes. We publish the article, but he owns the information. Since he did not quote a source (like you see in Ann Harmon's articles) the presumption is that he made the recipe himself, and therefore 'owns' it. It is not difficult to make a new recipe and 'own' it, but you can contact him to find out.

■ Why Bee Havers

In response to Donald Stambaugh's legally learned authoritative question – Why people have bees? It's my opinion that they have bees for the same reasons the beekeepers do. But most bee havers are much smarter than the beekeepers. For they have the common sense to leave the dadgum things alone. And let the bees do their more efficient job of cleaning the cells undisturbed by some dumb clumsy beekeeper. And they know wild bees do not have the disease caused by the manipulations of the beekeepers. So the law and enforcers are made to control the dumb beekeepers. Not the wild bees. They truly have their own laws to abide by. It's called by one and all – The survival of the fittest.

One thing to remember! Man will

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never control the honey bee. If the bees are unhappy they will simply fly away. And you can kiss your honey crop good-bye. So forget about trying to control the honey bee. Just try to make them happy. And hope you have done something right for a change.

Joseph M. Howe
Seattle, WA

■ Author Names

For some months I notice the author's names written in lower case letters. It looks downright degrading. Besides, it is against the rule of English writing, which requires that personal names start with a capital letter. I could not come up with a good answer when my grandson asked why you do it that way.

Oskar Wagner
Albany, IN

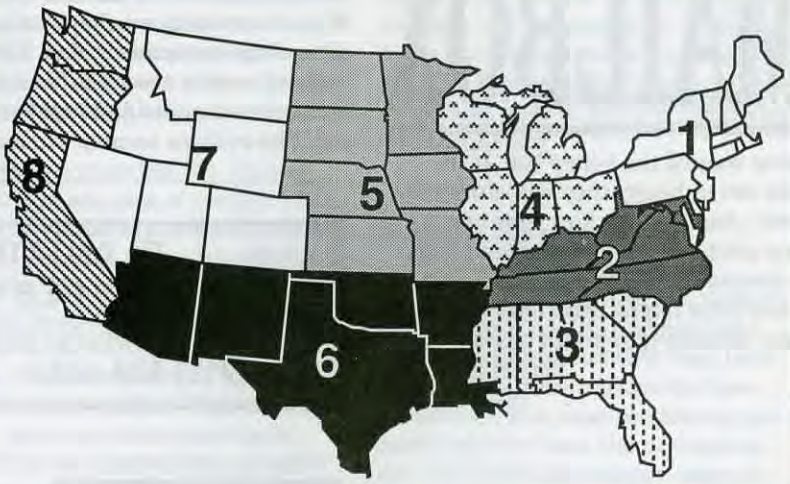
Editor's Note: Authors' names are correctly spelled in the Table of Contents. When we redesigned the cover and insides of the magazine in Jan. 1993, the authors' names were also 'designed' to fit the new layouts and typefaces chosen. The authors seem not to mind.

FEBRUARY Honey Report

February 1, 1994

REPORT FEATURES

Prices shown are averages from many reporters living in a region, and reflect that region's general price structure. The Range Column lists highest and lowest prices received across all regions, from all reporters.



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60 #Light	46.50	44.75	42.68	39.67	44.50	42.50	44.70	36.90	31.20-54.00	42.83	43.22	42.37
60 # Amber	42.85	41.60	42.00	38.00	42.26	42.07	43.65	33.13	21.40-51.60	41.05	41.09	40.18
55 gal. Light	.680	.530	.555	.523	.510	.536	.525	.522	.41-.85	.560	.560	.561
55 gal. Amber	.665	.485	.467	.493	.507	.500	.475	.470	.40-.73	.511	.512	.530
Wholesale – Case Lots												
1/2 # 24's	25.43	21.83	20.65	20.55	32.55	21.95	23.23	20.85	17.35-36.30	23.95	20.98	20.85
1 # 24's	30.99	29.60	28.90	30.33	28.20	34.40	26.68	30.73	25.00-36.00	31.21	30.98	30.61
2 # 12's	28.32	28.83	27.44	28.27	30.92	34.53	28.94	32.15	25.20-43.20	29.13	28.72	28.48
12 oz. Bears 24's	26.83	28.60	26.94	25.28	25.27	31.38	29.35	25.10	22.90-44.40	27.91	27.18	26.52
5 # 6's	28.12	27.90	28.14	31.10	29.95	26.00	28.08	29.36	26.00-33.45	28.41	29.59	29.31
Retail Honey Prices												
1/2 #	1.10	1.39	1.13	1.04	.92	1.16	1.11	1.13	.94-3.50	1.12	1.21	1.22
12 oz. Plastic	1.54	1.70	2.01	1.39	1.38	1.68	1.56	1.46	1.19-2.25	1.60	1.60	1.52
1 #	1.79	1.84	2.10	1.81	1.69	1.78	1.87	1.77	1.39-2.50	1.83	1.79	1.79
2 #	3.12	3.25	3.35	3.14	2.74	3.65	3.13	3.44	2.73-4.40	3.18	3.16	2.98
3 #	4.22	4.59	4.50	3.96	3.65	3.79	4.43	3.93	3.50-4.99	4.16	4.29	4.41
4 #	5.27	5.39	5.53	5.32	5.23	5.09	5.17	5.23	4.89-5.50	5.29	5.77	5.28
5 #	6.97	6.70	7.25	6.63	5.74	5.95	6.27	6.37	6.25-8.75	6.58	6.50	6.35
1 # Cream	2.56	2.52	2.06	1.74	1.99	2.29	2.15	2.38	1.74-3.00	2.26	2.52	2.20
1 # Comb	2.98	2.98	2.84	3.57	3.49	3.90	3.44	3.50	2.45-4.50	3.33	3.31	3.18
Round Plastic	2.42	2.66	2.91	2.85	3.00	2.79	3.51	2.25	1.75-4.25	2.81	2.78	2.63
Wax (Light)	1.97	1.29	1.88	1.33	1.68	1.66	1.30	1.38	1.15-2.00	1.47	1.61	1.45
Wax (Dark)	1.45	1.16	1.35	1.18	1.61	1.19	1.09	1.15	1.05-1.45	1.25	1.23	1.28
Poll. Fee/Col.	38.50	25.25	30.00	28.75	27.50	25.50	30.79	29.00	20.00-55.00	28.85	31.50	28.88

MARKET SHARE

Pollination is the hot topic this month, and probably all spring. With fewer colonies available for medium and small jobs, prices should go up, and demand continue to increase. A potential 'Revenue Enhancement' if you've a mind.

Will honey prices go up? Will President Clinton smile favorably on the industry? Will producers and packers get along? Will the AHP and ABF ever meet together? America wants to know!

Region 1

Prices and sales steady, but prices not increasing rapidly. Cold and snow have stopped inspections, but will make for a more typical winter. Check for feed if possible on light colonies. Pollination contracts should be finished soon, waiting for spring. Colony prices definitely going up as locations need more bees.

Region 2

Prices dropping some as specialty crops are mostly sold. Pollination prices are moving up generally, and demands for bees increasing, too. Mite problems 'seem' to be slowing, at least for tracheal.

Region 3

Sales and prices slow to steady. Import prices being felt at store shelf. Pollination contracts filling fast and prices are strong. Some $40.00 colonies reported, most $30.00.

Region 4

Prices, steady to lower, especially wholesale. Imports and large suppliers having significant impact here. Even retail is being affected. Pollination prices steady, but by spring that may change. Last minute contracts should be higher. Hard winter will take its toll. Check ASAP.

Region 5

Like region 4, prices, especially wholesale are being affected by imports and large suppliers. Small lots doing well, especially to specialty packers or sellers, but large scale sales are very, very low. Pollination prices little changed since last year, which shouldn't occur.

Region 6

Prices stable, low, but stable. Winter has been mild, with adequate moisture to date. Should be a good spring. *Varroa* still causing problems, especially reinfestation. Watch out. Pollination contracts steady, but will be increasing, shortly as AHB, few beekeepers and increased acres come together.

Region 7

Prices and demand doing O.K., but not moving much in either direction. Wholesale having trouble moving large lots, especially darker honey. The same is true in most regions. Pollination is pretty big business here, and most contracts are already set at about the same as last year.

Region 8

Sales and demand all over the map. Retail pretty strong, but bulk sales difficult to pinpoint. Large amount of imports certainly doesn't help, plus a good crop last year complicates the picture. Almonds dominate the pollination picture with prediction of enough to way short the number of colonies being predicted. WA and OR crops follow, and prices are steady to lower on some crops, higher on others (early and late, generally).

?DO YOU KNOW?

Honey Bee Society

clarence collison

Honey bees are social insects and basic management principles are directed at the colony level rather than being concerned with individual bees. Colony productivity and efficiency are related to population size. Success in beekeeping is related to developing populous colonies at the correct time to take advantage of the nectar flows. The social structure of the colony is based on the principles of division of labor, kin recognition and specialized reproductive castes. Numerous forms of communication are used within the honey bee colony to integrate their various social activities. How well do you understand the composition and functioning of the honey bee society? Please take a few minutes and answer the following questions to determine how well you understand this important topic.

The first nine questions are true and false. Place a T in front of the statement if entirely true and F if any part of the statement is incorrect. (Each question is worth 1 point).

1. ___ Individual worker honey bees are unable to survive by themselves.
2. ___ All colony activities are controlled by the queen.
3. ___ Chemicals produced internally that only affect the individual that produces and secretes them are known as pheromones.
4. ___ "Queen substance" is a mixture of chemical compounds that are secreted by the salivary glands of the queen.
5. ___ Queens, but not workers produce functional venom at the time of adult emergence.
6. ___ All species of honey bees normally nest inside dark cavities with small entrance holes.
7. ___ Each bee has a tendency to express different behaviors according to their genetic profile, physiological state and external stimuli present at the time.
8. ___ Virgin queens produce a pheromone that repels workers and other queens.
9. ___ Adult honey bees show aging characteristics.

Multiple Choice Questions (1 point each).

10. ___ Juvenile hormones control metamorphosis and reproductive development. Juvenile hormones are produced by the:
    A. Hypopharyngeal glands
    B. Salivary glands
    C. Corpora allata
    D. Mandibular glands
    E. Tergal glands

11. ___ The queen honey bee distinguishes between worker- and drone- size cells so the right type of egg is laid (fertilized or unfertilized) with her:
    A. Compound eyes
    B. Antennae
    C. Simple eyes
    D. Forelegs
    E. Abdomen

12. Name the two castes of honey bees normally found in a honey bee colony. (2 points)
13. Research has shown that there are two specific genes that control the house cleaning behavior of worker honey bees that remove the remains of dead larvae or pupae from brood cells. Compare the behavior of two individuals each having one of the genes. (2 points)

14. What is meant by the phrase that a colony is "hopelessly queenless"? (2 points)

    Pheromones (chemical messengers) are intricate components of the honey bee communication system. Please match the correct pheromone with the appropriate source or function.
    A) isopentyl acetate B) Nassanoff pheromone C) 2-heptanone D) 10-hydroxy-2-decenoic acid E) 9-oxo-2-decenoic acid F) Tergite gland pheromone G) Tarsal gland pheromone

15. ___ Secreted by the queen to attract drones during her mating flight.

16. ___ Two pheromones used by a swarm in flight to make its way to a new home site.

17 ___ Inhibits the development of ovaries in worker honey bees.

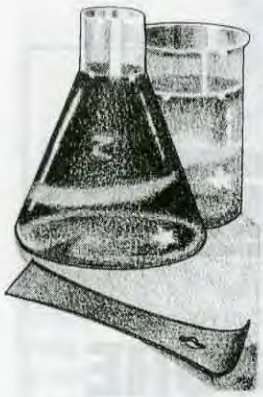
18. ___ Produced by worker bees' mandibular glands and is the main component of the brood food fed to larvae.

19. ___ Alarm pheromone produced by the worker bees' mandibular glands.

20. ___ Produced within the sting chamber and serves as an alarm pheromone.

21. Define the term trophallaxis, which is important in the honey bee society. (1 point)

ANSWERS ON PAGE 114



RESEARCH REVIEW

roger morse cornell university ithaca ny

"The Cogshall Free-Hanging frame can be a management tool to try."

The Coggshall free-hanging extracting frame is different than other frames because it encourages bees to work in the honey storage supers more rapidly. It does so by reducing the space between the combs in any two adjacent supers. The Coggshall frame has thick end bars and thinner top bars and bottom bars than are normally used today. This frame is just as strong, if not stronger, than conventional factory-made frames.

A fact that is often overlooked in practical beekeeping is that in a natural nest in a tree there is no break between the combs in the brood nest and the honey storage area immediately above it. The standard factory-made frame is made with a top bar that is 1-1/16 or 1-1/8" wide. The top bar is 3/4" or more thick and the bottom bar is 3/8" thick. If we add the 1/4" to 3/8" bee space that exists between two supers we find the combs are separated by a minimum of 1-3/8" to 1-1/2" This space is reduced by 1/4" or more with the Coggshall frame and that small reduction is important.

From the point of view of practical, stationary beekeeping the Coggshall frame appears to be much better. It is certainly cheaper to make. In addition to making a smaller break between supers, there is better ventilation because there is less wood. The Coggshall family switched to standard, self-spacing frames with wide shoulders (the Hoffman frame) when they became migratory in the 1930s and could not have swinging frames in the brood nest or honey storage supers. Prior to the mid-1930s they rarely moved colonies and extracting was done in the apiary with hand-cranked extractors.

There is nothing new about what I am writing here. Comb honey producers have been more alert to the importance of the space between the brood nest super and the honey storage supers than have been beekeepers who produce liquid honey. This is because of the difficulty in getting bees to start working in a comb honey super that has less space and no old comb. However, the same principles apply to the production of liquid honey. Comb honey producers resort to the use of bait sections or round section supers. Bait sections entice the bees into the supers while round section supers reduce the space between the super below and the comb honey super. It has been clearly demonstrated that having an abundance of storage space available encourages the bees to collect and store more honey.

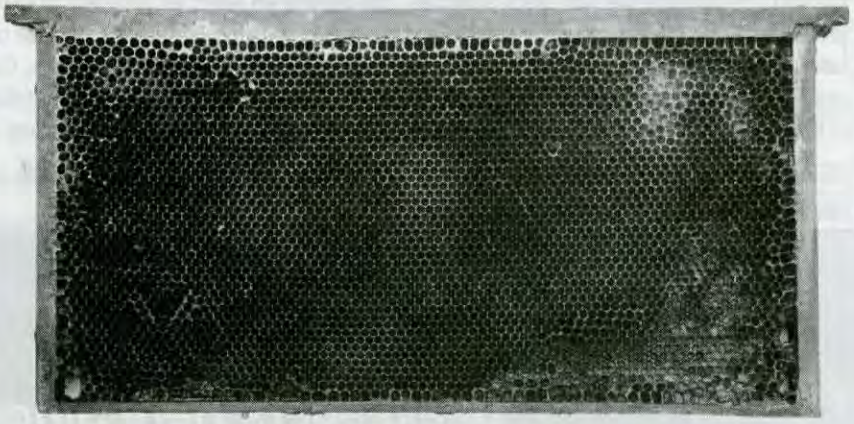
The Best Width

Several years ago I made a number of free-hanging frames that were either 3/4" 7/8" and 1" wide. (That is, the top bars, end bars and bottom bars were all the same, being one of these widths.) Most of my students and others who have uncapped these frames with hand knives agree that the 7/8" width is best and sufficiently strong, just as strong as a frame that has wider parts. Frames that are narrower are a bit frail but I still have a number of those only 3/4" wide in use.

The Dimensions

Since the Coggshall frames I have taken apart are homemade there is some variation in their dimensions. However, most have a uniform width of 7/8" for all of the three parts: top bars, bottom bars and end bars. A few are a bit wider but none is a full inch wide. The top bars are 5/8" deep and the bottom bars are 3/16" thick. A few bottom bars are a bit thicker. The end bars are a uniform 1/2" thick. It is the thick end bars that allows the use of much longer and heavier nails than are normally used in frame construction and it is in this regard that the Coggshall frames are so strong.

The Coggshall free-hanging frame.



One of the great weaknesses in the standard factory-made frame is that the end bars are thin and using long nails, which have a better holding power, is difficult because the wood in the end bars splits so easily. We still have many made prior to 1930 in our colonies at Cornell and I have seen them in other beekeeping outfits in the vicinity.

Nailing

Ten nails are used to nail a Coggshall frame: four nail the top bar to the end bars and another four nail the bottom bars in place. One nail is used on each end, just under the lug, and perpendicular to the nails holding the top bar in place. The nails holding the top bar in place are 1-5/8" long while those holding the bottom bar in place are 1-1/8" long. The nails are much longer than those normally used to nail a frame. The lumber is native white pine found in the northeastern U. S. but other soft woods work just as well.

Wiring

The free-hanging frame is usually wired with four horizontal wires about equally spaced from top to bottom. The heavy end bars allows one to draw the wires tight, giving strength to the frame and keeping the foundation straight. Most free-hanging frames have a slit cut into the underside of the top bar into which the foundation may be inserted. The foundation may be fixed into place with a few drops of hot beeswax but this is usually not necessary.

One Problem

Only recently I was using a power uncapper and found that the round rod that rests on the top bar and forces the frame between the two vibrating knives would sometimes slip around a top bar that is only 7/8" wide. One can adjust the machine and compensate for this difference if only narrower frames are being uncapped. However, when one has a mixture of frames with varying top bar widths there is a problem and the machine is easily jammed by frames with narrow top bars.

Who was W. L. Coggshall?

William L. Coggshall was one of the pioneer beekeepers in North America. In the beginning he was in partnership with his brother, David. However, when they married they split the outfit though they owned adjacent farms outside of Groton, NY. W. L. Coggshall had 4,000 colonies around the turn of the century. He was not a migratory beekeeper. However, he kept bees in Cuba, Florida, and Arizona and was always searching for new beekeeping territory. His name is often found in the bee journals and books of the time since he corresponded extensively with the Roots and Dadants. Two more generations of beekeepers followed in W. L's footsteps but no one in the family is active in beekeeping at present.

POLLEN

richard bonney

"Timing, method and placement of pollen are all important. It MUST *be there when the bees need it."*

One of the things we learn as novice beekeepers is that honey bees need pollen to survive and that individual bees need it almost the instant that they emerge from their natal cells. At that time though full grown and ready to do certain types of work, a bee is not mature; her muscles and her glandular systems have not yet fully developed. One of the ways we can demonstrate this is to pick up a newly emerged bee and try to get her to sting. She can't or won't. As time passes, she gains the ability to do this and other things, such as feeding brood, secreting wax and flying.

We also learn that a bee goes through a series of jobs during her life, undertaking each at a more or less set time during her development. When she first emerges she cleans cells. Soon she may take up fanning, or capping cells or may become part of the queen's court. Very quickly, she starts to tend brood, and before long will go on orientation flights. Each job or activity she undertakes demonstrates an increased capability or development stage for that bee. She undertakes each responsibility as she becomes capable of doing it.

Her first two or three jobs put little demand on her body. To clean cells requires the ability to lick. Attending the queen requires more licking so she grooms and cleans. As the hours pass, new systems come into play. Fanning, for instance, is possible because her flight muscles have started to mature, although not enough to fly. Fanning also exercises those muscles, helping their further development. Capping cells is easy. Pick up wax, either newly secreted by a more mature bee, or recycled from somewhere else in the hive, and put it in place. As soon as her hypopharyngeal glands become active, she begins to feed brood. Later, she makes orientation flights, first to learn the appearance of her hive and ultimately, to recognize her surroundings. Incidentally, these flights further strengthen the flight muscles. As time passes, and more capabilities are added, she becomes what might be termed a fully functional worker.

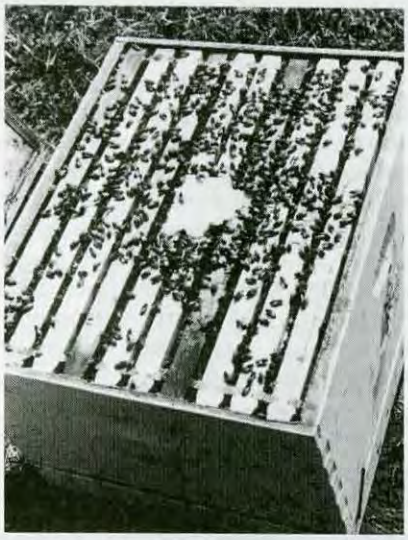
Fully functional is something of a misnomer. In a sense, a worker is never fully functional. Throughout the first half of her life she is always about to become capable of undertaking some new task. However, she is also losing certain abilities as time passes. A two-week-old bee is no longer capable of doing all of the things she did in her first week. Her hypopharyngeal glands atrophy, for instance. A field bee, in the normal course of events, is not capable of doing much of anything inside the hive. She has lost her house bee inclinations and talents.

Let's get back to talking about pollen, because it is the key to this development. None of these capabilities can come into play in the absence of protein, and in a bee's diet, protein is provided by pollen. From the moment of emergence a bee seems to sense its importance. One of the first things she does is seek out a cell of pollen and eat. She will consume significant quantities during that first week. As time passes and her body matures, pollen becomes less important, but since it is a constituent part of the honey stored in the hive, she will always be consuming a certain amount of it. Honey is eaten as her source of carbohydrates, her energy, but honey alone does not give as much pollen as a developing bee needs.

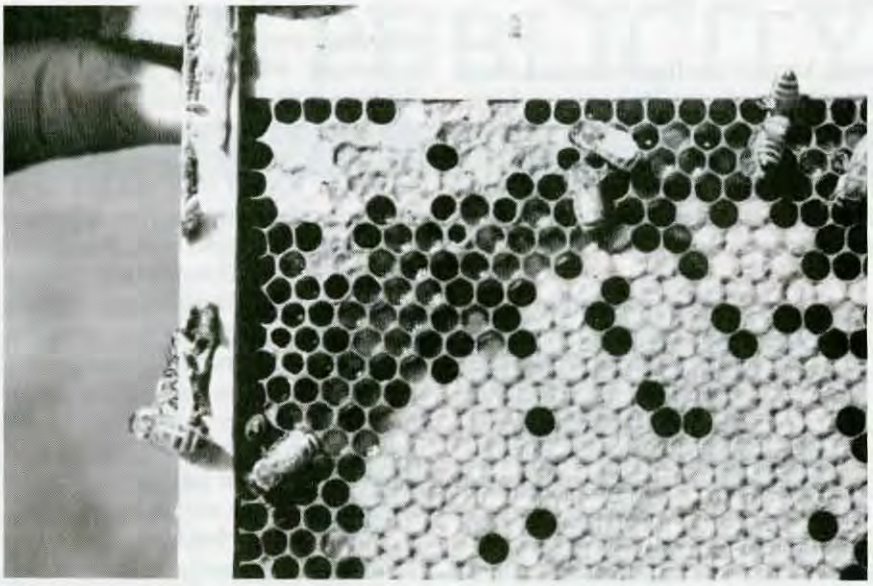
As a bee progresses through her life, taking on more activities, she also expands in another way. She first emerges in the brood nest where it is dark and warm. During her early days she requires this secure environment and does not normally leave it. Each of her early tasks is done here, but as her responsibilities grow, she begins to move outward, first to the farther reaches of the hive and ultimately to the great outdoors. It is in those early days though, that she eats so much pollen.

We are all familiar with the standard usage pattern of a hive — a brood nest, surrounded on the top and sides with a shell of stored pollen which in turn is surrounded by a much deeper shell of honey. This pattern is most obvious in the fall when the bees are getting organized for winter. In the late fall there might not actually be a brood nest, but there will be a cluster. Given a brood nest, the pollen will be found immediately adjacent. The young emerging bees do not have to travel far. In fact, they will not travel far and might not find the pollen if it is not nearby, within an inch or so of the edge of the brood nest.

In the more active season the pollen is not necessarily stored only in this pattern. It will also be stored in the brood nest itself. We do not see much of it there, though. With hundreds of young bees emerging daily, the pollen is eaten almost as soon as it is deposited. We do see pollen sur-



A pollen patty laid directly on the brood frames is most accessible.



The classic storage pattern we have come to expect – brood, surrounded by a shell of pollen, surrounded by a deeper shell of honey.

When you see open cells like this in the brood area, look inside. You may find pollen.

rounding the brood nest and assume it to be in the basic storage area. It might more properly be considered the overflow area; there was no more room in the brood nest. Because it is outside the brood nest proper, the young bees may not find it readily. However, as the brood nest expands and moves, this pollen becomes more readily available.

If you have ever followed the progress of a pollen-laden bee in the hive, you may have seen that she did not necessarily go directly to the pollen storage area — the one adjacent to the brood nest. She may have wandered about in the brood nest for a while, searching for an appropriate cell in which to place the pollen. Not finding one, she finally moved to the perimeter.

During the active season we do not give much attention to pollen. It is readily available through most of the country and the bees find it as they need it. Even in the late season, as they are storing ahead for the winter to come, pollen is seldom a problem. We expect to see at least two or three frames of pollen in the hive as we button things up in the fall. Usually it's there, and stored in the classical pattern around the brood or cluster area. It is in the late winter or early spring that we should be a little concerned. Is there still pollen in the hive? Further, will it be within reach of those young bees as they emerge?

What are the implications if no pollen is present? If no pollen, or very little pollen, is present and none is coming in, the colony will not raise brood. If brood rearing has been underway and pollen stores run low, they may start removing some or all of that brood. Bees do not allow brood to develop and emerge if the colony cannot support these new members.

But, through normal attrition the colony has lost half or more of its population over the winter, and they must rebuild.

Therefore, you putt the hive to bed for the winter, check the amount of pollen on hand. If the bees have less than two to three frames, be prepared to feed protein the following spring. If more than two to three frames are present, the colony will probably be all right, but monitor it in the spring anyway. Spring buildup is all important and you do not want any setbacks.

If you decide to feed protein in the spring, because of need, for insurance, or because you wish to stimulate brood rearing, you have a choice of materials. Straight pollen, pollen substitute and pollen supplement are the possibilities. Pollen, of course, must be bee-collected originally, and subsequently collected from the bees using a pollen trap. Alternatively, frames of pollen may be taken from a hive with an overabundance and shifted to a needy colony, perhaps

Continued on Next Page

POLLEN ... Cont. From Pg. 87

being kept in the freezer until a need becomes apparent. Be cautious here. Pollen can become too old and lose its value. The bees don't necessarily know this, however, and may use it anyhow, to their later nutritional detriment.

Pollen substitute may be any of several prepared mixtures containing such materials as soy flour, skim milk, brewers yeast, and other materials which provide the bees with the necessary protein and other nutrients so that colony life may proceed normally. Pollen supplement is a mixture of pollen and pollen substitute. Many beekeepers mix their own pollen substitutes, but commercially prepared products are available and are a lot less work for a beekeeper with only a few hives. *(Editor's Note: Because of the high risk of disease in commercially available pollen, do not feed your bees any pollen (or honey) that did not come from your own disease-free colonies.)*

Timing, method, and placement of the pollen are all important. It must be in place when the bees are ready to begin their spring buildup and the supply must not run out before natural pollen becomes available in quantity. Although dry pollen can be fed outside in good weather, it is best to place moist pollen patties directly on the frames of the active brood area.

Then, keep checking. Once you have started to feed any form of pollen, you have made the colony dependent on you. Weather and other conditions allowing, and assuming the presence of ample honey, they will begin to raise brood in response to the amount of pollen you provide. Do not let them run out before the natural material becomes available in quantity.

As a final thought, perhaps you did not need to feed pollen but chose to do so to stimulate colony growth so that you could make up a nuc or split later. Keep in mind that the flip side of this is swarming. Swarming is by no means automatic with increased population, but you have increased the chances, and swarm season may sneak up on you before you make your split. Keep an eye on things.

Dick Bonney is the Extension Apiculturist for the state of Mass., and the author of two books on beekeeping management.

Pollination

POLLINATION PUBLICITY

walter clark

Creating a Media Event is good *for business*

One certain way of getting the media interested in beekeeping is to invite them along for the adventure. We've already discussed the mechanics of beeyard publicity (see October 1993, *Bee Culture*, "P.R. from the Beeyard"). So before we get started, be sure to backpedal to that issue for more information on good public relations. For now, let's discuss just one aspect of P.R., the media event. What is a media event? It's inviting the media to an event, that is, *creating* a news story. What's the purpose of a media event? To generate publicity on your business and its services, which brings customers to your door.

A media event is sometimes called a special event or "news conference". Don't let the concept be intimidating. If you have a plan of action and use a little ingenuity, creativity and organization you can create events that easily attract coverage in the news media. No, we're not talking about giving out phony stories or doing anything else unethical. We're talking about causing something to occur, in this case getting an article in the news. And we're doing it by inviting the media to observe what we do best – demonstrate the benefits of beekeeping and pollination.

Scheduling a 'Media Event' in a setting as beautiful as an orchard in bloom makes getting reporters out an easy affair. Be sure to plan for a rain date.

Actually a media event uses all aspects of what is known as "publicity," and publicity basically includes: 1) press releases, b) fact sheets, and c) interviews. So to "stage" our media event, we need to "release" the event (tell them it's occurring), give out the facts (background information from which stories are developed), and talk to them at the event (be interviewed). Here's an outline of those steps.

Make Initial Contacts

First, contact the appropriate media at least a few weeks ahead of time. Do a general mailing, or target just a couple newspapers or television stations in your area. You can use a press release, business brochure, or flyer describing your event, or a combination. Be sure to include the five W's. Who, What, Where, When, Why and How. Answer all of these questions thoroughly for your audience so they'll know what they're getting into. Also, a personal cover letter giving the details of your event can be a real eye catcher. Carefully write a cover letter on your company letterhead to let the reporter know he/she is getting a good lead rather than being schmoozed.

A few days before your proposed event follow-up with phone calls and *on-time* mailings to secure the time, place and activities for the journalists you're expecting to show. Personal calls to editors and writers should never last longer than necessary to explain your idea. Most are busy (who isn't anymore?) and dislike being interrupted or "asked" to attend. Just state the facts: "Wanted to remind you we'll be discussing and demonstrating beekeeping and pollination at Redskin Orchard on May second. We'll be meeting at Old Country Road 7 and Highway 30 at 11 a.m. Thanks, hope to see you there!"

In addition, if you happened to stage a pollination "field day" for your state organization, submit the details on the time and place to the "Events" column of your local paper's farm section. This is a near guarantee to get your event published for free.

Provide Background Information

Now, in preparation of the day, you can jump on the information highway. Providing the media contacts with fact sheets, video tapes, photographs or other articles on pollination the day they arrive gives them a head start on doing their jobs. This is called a "media kit," and making one for the media can win a lot of points with them. Be sure to also let your contacts know there are plenty of opportunities for their photographs in the springtime orchards and country locations.

Continued on Next Page

MEDIA KIT CONTENTS

Items to consider for your media kit include:

- A brief summary of the crop you are pollinating; i.e. apples
  - 9,000 acres in your state
  - $1,000,000 in income
  - 165 jobs
  - etc.
- A brief summary of the beekeeping industry in your state; i.e.
  - 7,000 registered beekeepers
  - 121,000 colonies
  - 5,000,000 lbs. honey produced last year
  - $750,000 income from beekeeping
  - 65 full time jobs
  - etc.
- A map of where pollinated crops are grown in the state.
- Brief description of your business and the business of the orchard.
- Business card with phone numbers (day and night if possible).

POLLINATION PUBLICITY ... Cont. From Pg. 89

I assume most of you are interested in newspapers. Newspapers are generalist and don't deal with subjects in any great depth, so don't prepare with too much ready-to-publish materials. Pollination is really a rather routine process. Unless there's a need for more in-depth information, keep it simple and factual. Have a short agenda, discussing the beekeeper's year, (overwintering, spring build-up, the advantages of pollination, and simple statistics on the life in the hive). Then be prepared for questions (see box).

Being Interviewed

Again, don't be intimidated by reporters. Answer questions fully, factually and honestly. If they ask a question that you don't have an answer for, simply say, "I don't know but I'll be happy to find out and call you this afternoon." Being interviewed is just having a conversation while someone else takes notes. Take the time to do it right and you'll have repeat customers for future events.

What are the issues?

First off, what are the issues in your area? This nation's beekeepers, policy makers and the industry face a host of concerns, so coming up with topics of interest won't be too difficult for most of us. In addition to basic yard management, are you running any field tests, establishing biological controls, using integrated pest management, pheromone trapping or pollen dusting? These are all topics of interest to reporters. However, be prepared for questions about stinging, allergic reactions, and public concerns about pesticide use. And don't forget the Africanized honey bee.

What facts would you like to communicate to an interested public? Is your event to inform, entertain, or accommodate scientific inquiry? All of these are topics of importance and should be considered.

Additional Considerations

Prepare your media event at *least a month* in advance. The National Honey Board has on file a number of articles which cover pollination. Contact them to obtain articles that will help you put together a media kit.

Obviously, enlisting the help of your local fruit and vegetable growers will make a media event go smoother. If you don't feel you can speak well with the media, team up. Many successful orchardists, especially those with a retail outlet on their property, are experienced publicists who organize advertising cooperatives, "farm-fresh" produce guides and other promotions of small-crop farmers in their area. Most will be happy to have the exposure and assist you in educating the media on the pollination process. Maybe the fruit and vegetable growers are considering a field day of their own. Try to combine your efforts to increase the likelihood of the media attending.

Don't be intimidated by reporters. Being interviewed is just like having a conversation, only they're taking notes.

Liability is an issue. Be sure, if you have a largely "agriculturally-inexperienced" crowd show up, to have plenty of extra headnets and a commercial grade first aid and sting kit for unexpected situations. Have someone supervise the crowd while beekeepers and/or orchardists are interviewed regarding their work. In some cases, you may only have one reporter show up. Great, that's all you need. On the other hand, many journalists and reporters in rural areas are younger and may not have the advantage of a rural background or the experience of farming, so they may show up in numbers and know nothing about bees. One good idea is to have an empty hive handy so when your discussing brood patterns, honey supers and landing boards they can keep up, sans bees.

Publicity Equals Dollars

Comparing apples with oranges during pollination time can make front page publicity of your business a reality! What's more, good publicity can generate thousands of dollars in business for the serious sideliner or commercial beekeeper interested in continued success. Look at it this way: one 50-hive pollination contract from a fruit or vegetable grower in your area (who sees an article on you) could mean an extra $750 to $2,500 in springtime income on hives that might otherwise sit in outyards. Pollination is a highly specialized niche marketing, and locating customers is not always easy. A media event is a quick way of broadcasting your business interests and keeping your business in the limelight.

Walter Clark is a Public Relations Expert in Des Moines, Iowa. He has contributed articles on Public Relations and Marketing.

3 Easy-Move Tips

mary & bill weaver

In February's cold, blustery weather, as the beekeeper props his feet before the fire for a bit of midwinter rest, more and more, visions of costs for menthol, Apistan, and terramycin dance through his head. Perhaps with some prodding from his spouse, he casts about for ways to bring in more cash flow from his investment in the bees.

Pollination offers one possible source of revenue for a cash-strapped beekeeper. Pollination fees have been rising in recent years. But pollination requires moving hives, and many beekeepers have had, like us, such back-breaking, frustrating experiences in moving hives that they are inclined to reject this avenue.

This is unfortunate, because moving bees, with the right equipment and techniques, does not have to be a job to be avoided at all costs. My husband and I, two 51-year old semi-softies, have moved a lot of hives in the five years we've kept bees. We prefer not to hire outside help for our operation, so any hives that get moved are moved by us, personally. Because of what we've learned through trial and error, we now consider moving hives to be a rather enjoyable task.

First, we no longer use hive staples to hold hive parts together. Staples damage wooden equipment, are time-consuming to apply, and still allow a bit of movement of hive parts – just enough, sometimes, to allow an enterprising bee to lead the troops through a newly created crack at just the wrong time.

Instead, we now use straps that fasten with a ratchet action. We simply loop the strap around the entire hive. There's no straining to tighten the straps. They ratchet easily to super-taut. So tight, in fact, the hive can be slid into place on a truck with no worries about shifting hive bodies and escaping bees.

Showing detail of ratchet mechanism on belt and double screen.

Generally, the straps hold even slightly warped inner covers and telescoping covers so tightly to the top of the hive that the bees have no avenue of escape here either, and no taping around the cover is necessary.

Second, we've found that the Super Hive Carrier, made by Dr. Howard Katz, a dentist and anesthesiologist, makes carrying hives a breeze. With this nifty device, neither of the people carrying a hive needs to walk backwards, and there's no trying to juggle a heavy hive by the bottom board.

The hive carrier, which weighs only about six pounds, opens wide to fit over the top of the hive. Then special grippers clamp securely into the handholds on the hive body.

Dr. Katz based his design somewhat on a hive carrier made about 15 years ago by an outfit in Detroit. When they went out of business Dr. Katz set out to improve on the design and manufacture the carrier himself.

The original hive carrier had a U-shaped handle that was grasped in front of the beekeeper. Dr. Katz straightened the handles so they could be held comfortably at the beekeeper's sides, and reinforced them so they were strong enough to carry a heavy hive or a stack of supers.

Dr. Katz, a perfectionist, is still looking to improve on his hive carrier. For example, he wasn't satisfied with the rubber hand grips on the first few carriers he shipped. He finally found what he was looking for in a bicycle shop in York, PA, and the new, improved hand grips now come on all hive carriers.

Purchasers of the earliest hive carriers can get the newer model hand grips from Dr. Katz for $1.50. Purchasers of earlier models would also be wise to get lock nuts to replace those that came with the carrier to prevent the nuts holding the carrier together from coming loose. Lock nuts are now standard on all hive carriers.

With Katz's hive carrier my husband and I can easily move hives weighing 100 pounds plus. The hive carrier is also useful when you are taking off full supers of honey. We consider it to be one of the best equipment buys we've ever made. All the hive carriers are guaranteed for the life of the purchaser.

Once we showed our fancy new hive carrier to an old-time beekeeper up in the mountains. He appraised it

Mary & son, Bill III, demonstrate use of the Katz hive carrier.

Shows the folded screen partially inserted in the hive opening.

with a skeptical eye, then informed us that he didn't need no new-fangled contraption for moving bees. He had his own way of handling heavy hives.

He showed us how he did it. Before he and his helper picked up a hive, he slapped it soundly on the side. Then they picked up the hive, walked 20 feet or so, and then he pounded on the side of the hive again. They continued in that manner till they'd reached the truck.

When the hive was safely loaded, we asked him the reason for all the slapping and pounding.

"Well," he said, "If you can keep all them bees in the hive aflyin' it makes the hive a lot lighter to move."

We decided that we preferred our new fangled hive carrier to his homespun methods.

On the serious side again, a third thing we've learned is to use a moving screen or a double screen on top of the hive instead of a regular cover when moving bees in hot weather. This allows the heat built up by the bees to escape. Overheating can be a very serious problem when you're moving bees.

In fact, if the weather is particularly hot and you have a vehicle breakdown or are moving a long distance, it may even be necessary to sprinkle water on top of the screens periodically so the bees can use it to cool the hive.

Each year we move spring-started splits from our home base in southeastern PA, where the honey flow ends by July 1, to the mountains of northern PA to continue to build up for winter.

In northern PA, alfalfa and clover provide nectar through July and August, and the goldenrod flow lasts until frost. It's a four-hour trip from home to our northern bee yards, but with moving screens on top of the hives the bees make the move in good shape. They are also useful when moving hives mid-summer to pollinate pumpkins, cantaloupes, cucumbers, and squash.

Fourth, to close hive entrances, we now use a folded screen inserted in the entrance. We cut the screen length to fit the bottom board, and about 6-1/2" wide. Then we fold it in half lengthwise. With the folded edge inserted in the hive opening, the bees are well contained with just a few staples on the screen edges to hold it in place.

We understand some beekeepers use the folded screen approach without staples and we have done this for short moves. But we feel more secure when there are a few staples to hold the screen in place.

We generally screen up hives in the evening just before dark, when most of the bees have returned to the hive. Sometimes, particularly in warm weather, lots of bees are clustered on the outside of the hive in the evening. Usually, a moderate smoking will drive these bees inside, and the hive can then be screened. Or sometimes we return at daybreak to do the screening if the strapping and taping have been done the evening before.

Duct tape must have a thousand uses, and one of these is closing cracks and holes when moving hives. There are a lot of cheap duct tapes in the discount stores that don't stick well. Our favorite brand is Frost King, which holds securely. A problem arises, though, when you try to tape the hives in the evening after the dew has fallen. No brand of duct tape adheres well when hive parts are damp. Be sure to seal up your hives before the dew falls.

So, with belts, the Katz hive carrier, folded screens, and good duct tape, moving hives can be a rather pleasant job. But a small scale beekeeper will probably always look with some envy at the commercial operator when it comes to moving hives.

For the big beekeeper, with four hives attached to a pallet, moving hives is a snap. He simply pulls a forklift to the bee yard behind his flatbed truck. The forklift places each pallet with its four hives effortlessly onto the flatbed.

Big beekeepers are proud of their forklift skills. A good operator can load or unload several hundred hives in a matter of a few hours. Then he throws the netting over the truck and straps the load down, and he's ready to move.

Most of us will never achieve such effortless speed. But using the methods we've described, you should find the task of moving hives, for pollination or other purposes, to be much, much more pleasant.

Mary & Bill Weaver move many of their 200 colonies for honey production and several pollination contracts in PA. They are free lance writers for a local newspaper, and are retired science teachers.

You can obtain rachet-type hive straps from Keeper Corp., P.O. Box 675, Willimantic, CT 06226, or Kevlock Products/AGM Container Controls Inc., P.O. Box 40020, Tucson, AZ 85775-1702.

The Katz Hive Carrier is available from Dr. Katz, 6818 Campfield Road, Baltimore, MD 21207 for $52.95

BEE WRANGLER

And Fried Green Tomatoes

faith andrews bedford

The young woman saunters confidently towards an old, hollow tree, places her hand deep into a dark hole from which swarm thousands of bees and pulls out a chunk of comb honey. The bees fly about excitedly and crawl all over her yet she smiles throughout the whole scene. Placing the comb carefully into a Mason jar, she returns to a picnic and the friend who had been waiting for some fresh honey for their biscuits. Seeing the look of amazement on her friend's face, the young woman tells her that she can do that because she is a bee charmer.

The "bee charmer" is actress Mary Stuart Masterson and this scene, from the movie, "Fried Green Tomatoes," has left viewers wondering just how it was done. Norman E. Gary, listed in the movie's credits, as the "Bee Wrangler," is happy to explain just what a bee wrangler does and how that scene was staged.

Dr. Gary, who has been a professor of entomology at the University of California at Davis since 1962, says that a lot of people have wrongly concluded that the bee scene involved pouring honey into the hollow tree and spreading it on Miss Masterson's clothes. He explains, "I have a lot of tricks and trade secrets and I don't reveal all of them but in that particular scene I used queen pheromone. The queen's odor, you know, really attracts the bees. They're not interested in anything but finding that queen."

Asked if Masterson had been nervous about the scene or if the director had used a double at any point Dr. Gary replies, "Oh, no. Mary Stuart did the whole stunt herself and was a very, very excellent person to work with. She was receptive to my ideas, she listened carefully to the director and to me and she developed complete confidence in my work. The director was shown a number of productions in which I'd done things and they communicated to her that I had everything under control. The thing went like clockwork, she didn't get a single sting and we didn't have to use a stand-in at any point."

It turns out that Dr. Gary has been a bee wrangler for a long time, although he didn't like that term at first. "I tried to persuade them that a more appropriate title would be 'Bee Special Effects' but, truly, the term special effects applies to things that are not real and the bees were just as real as a dog or a cat so they insisted upon the term 'wrangler.' I sort of grew to like that after all."

Dr. Gary has been interested in bees since the age of 16 when he ripped down his mother's lace curtains to serve as a veil while he extracted a wild swarm of bees from a hollow tree near his home in Florida. Although he's worked with bees for 40 years, he didn't begin bee wrangling until the mid-1960s when a television station in San Francisco was running a series on animals and needed some footage on bees. After Dr. Gary narrated that piece on honey bees he began to get calls to do other television shows. He recalls, "I've done two films for Newton's Apple, the children's science documentary; one for 'Make a Wish' one for 'Animals, Animals, Animals' and my favorite, a show called 'Wild, Wild World of Animals. I was sort of used as an attention-getting device at the beginning of the film. I was standing there with bees all over my head completely covered, you couldn't see any features whatever. I had some queen odor, pheromone, on my hair. In the scene, I held my breath while the bees completely covered me and then I leaned over and shook them off and made a smile, really big you know, to sort of prove that there was no protection on my face."

The television shows were fun, said Dr. Gary, but when he was asked to do work on a made-for-television film he discovered he was something of a ham. "I was never in serious danger of becoming a good actor," Dr. Gary admitted ruefully but he added, "There is no way you can teach a subject for an entire career and maintain the level of enthusiasm that students expect without being something of an actor."

Dr. Gary, who is now a card-carrying member of the Screen Actors' Guild, was working on "Savage Bees" near New Orleans in 1976 when a scene, being filmed in a nearby swamp, called for a tractor driver to be attacked by bees. Needless to say, no one wanted to play the part, so Gary volunteered. "The swarm descended on me and I had to leap to ground and dash for a nearby pond. Later on they showed my dead body brought to the surface with a grappling hook, my mouth filled with dead 'killer' bees. I used the queen pheromone again but the real trick was staying submerged until the director wanted me to rise. Finally they pinned me down with an oar until the time

was right but all that time I could hear alligators underneath the water nearby."

At last count, Dr. Gary had worked on about 15 or 20 television shows and three movies. "Savage Bees," one of the made-for-television movies on which he consulted did go theatrical and, in his words, "became a big hit in lots of different countries." Asked if he did any work on "The Swarm," Dr. Gary replies, "No. Irving Allen consulted with me for about half a day but I don't think he ever really believed that I could do the things with bees that I said I could. So he opted for optical effects and those kinds of things and spent a lot of money. The film was pulled out of the theaters after about a week or so. It was a disaster."

Gary's research interests in bee behavior have involved him in the study of Africanized bees for the past 20 years. He first went to Brazil to study them in 1971 and returned there five years later to work on the film "In Search of the Killer Bee." Asked how he felt about working on films that portray the beneficial and normally docile honey bee as savage Gary answered, "It's true, these films are not the sort that would please beekeepers. But you know, you have to open up and realize that the use of animals of all types for entertainment is a very legitimate form of expression and as long as you're not hurting them or treating them inhumanely then I think it is only fair that we give people who like to watch that sort of thing the opportunity to do so. I mean, I'm sure the bird lovers who watched Alfred Hitchcock's 'The Birds' probably didn't like that either."

Asked what was the most spectacular stunt he's done with bees, Dr. Gary quickly responds, "Oh certainly the time I was asked to create a pyramid of cheerleaders and cover them with a million bees." Was it difficult to find a bunch of girls to do that? "Not at all," Dr. Gary answers. "They were all University of California cheerleaders from right here on our campus and they were very, very dedicated and very brave and cool girls."

Dr. Gary who plays both clarinet and saxophone with a jazz band called the "Honey Combo," thinks he is probably the only real bee wrangler in Hollywood.

Real?

"Well," Dr. Gary explains, "I've seen one or two other guys do imitations. But I think I am the only one who really does it the right way with very large populations of bees. I use them in very tricky situations and make the actors feel very good about it. I am perfectly confident that I am the best in the world in doing this sort of thing. I am a rare combination of a research scientist in bee behavior, a teacher and a commercial beekeeper with 40 years of experience. I've done it all. I just understand bees well enough to make them behave.

Faith Andrews Bedford is a beekeeper and writer from Ivy, Virginia. She has contributed articles on marketing and harvesting honey to Bee Culture.

THE HONEYCOMB KID

Jeff Painter likes honey but he has never tasted honeycomb. His mother, Nancy, has been baking. Hot from the oven, a dozen golden rolls grace the wicker basket on the table in front of us. We grab a couple and slather them with butter. I cut some honeycomb, hand him an oversized chunk and then sit back to watch his face. Remember the joy of that first bite? The soft crunch as honey bursts from the wax? The way it squirts from the comb into your mouth? Jeff's cheeks bulge for an instant then a sweet trickle oozes out and runs down his chin. He licks his lips. His eyes get big. He chews the last bit of sweetness from the wax, thoughtfully. By the time he's on his third roll he has made up his mind. He calmly announces that he wants a hive and a colony of bees all his own. "Please, Mom, can I?"

His mother thinks it's a great idea. "But you're the beekeeper, Vince, what do you think? Is he too young?"

I think I'm in a lot of trouble. He's watching me. How old do you have to be before you start beekeeping, anyway? He is young and it's already Thanksgiving. We are at the end of another natural cycle. The honey bees have their stores laid up for the winter. Brood rearing is slackening off. And it has begun to rain. Here on Vancouver Island the rains come early and continue through the winter. Not the best time to be breaking the propolis seal and examining the colonies.

I am afraid that by the time spring rolls around Jeff will have lost interest and the world might lose another potential beekeeper. To me, bees are important in the scheme of things if only for the fact that they make beekeepers the way they are. Most beekeepers are careful of their environment. Many of us have gardens where we cultivate vegetables, fruit and flowers without the use of herbicides, pesticides or other harmful chemicals. Because our honey bees keep us close to nature we develop a healthy respect for life. And I can't imagine a beekeeper smoking crack or holding up a liquor store. Beekeeping has got to be one of the best character builders on the planet. I can't let the opportunity pass and I opt for a compromise that will give me some time to plan.

"Tomorrow I'll bring you a book. It's called *The ABC & XYZ of Beekeeping*. Its got lots of pictures. Just thumb through it and when you see a picture you like you can read about it. In the meantime let's have some more buns and honeycomb."

The trouble was I couldn't decide where to start. What was needed was something that would involve him immediately, that would keep him actively interested until we could get into the colonies again. A game of some kind – a contest with a prize at the end. I looked through my articles on beekeeping and found the answer.

I scanned it. There was a section on STANDARDS OF PERFECTION FOR HONEY AND BEESWAX with classes for liquid honey, granulated honey and comb honey, beeswax and best frame of honey. It said: "This is one of the easiest exhibits to prepare " That appealed to me. Something easy. It would be a good experience for both of us. I had never exhibited. We could learn together.

Jeff was enthusiastic. "When can we start?"

"Well, what do we need to do first? It says here that the frame has to be clean white wood. I think we need some new frames and supers."

"Why can't we just use the stuff you've got?"

"Well it's not clean enough. Just look what the honey bees have done to them. They've stuck propolis all over the place. I've managed to split the wood where I didn't nail properly and even the best of them have marks from the hive tool. Some have splits and knots in them. No, they won't do. We'll need every point we can get. And that means the frames must be perfect."

What I didn't tell him was that he was up against some stiff competition. A well-known beekeeper in the Cowichan Valley has taken first prize in every category for as long as I can remember. He deserves to win. He lives to win. If Jeff meant to come away with first prize in the face of such awesome competition, even in the simplest of categories, he was going to have to be good. Very good indeed.

"You're right," Jeff said, "They don't look pretty."

by vincent doyle

PROVINCE OF
BRITISH COLUMBIA,
Department of Agriculture
Exhibition Standards
of Perfection
for
DAIRY PRODUCTS, POULTRY
PRODUCTS, and HONEY.
Circular No. 50A

Some local fairs and all 4-H exhibits have a category that calls for a comb of honey as removed from the hive. This is one of the easiest exhibits to prepare, but the beekeeper should provide a wooden stand for holding the frame. Choose a comb completely filled and capped. The cappings should have an even surface and be white. Brood-rearing darkens combs and the best comb for exhibition is one that has been constructed, filled and capped during a strong flow of light-colored honey.

Take care not to damage the comb once it is removed from the colony. Let it hang free in a wooden box, such as an apple-box, with cleats to prevent it from moving once it is in place. Scrape the wooden frame free of propolis and then wrap the comb in cellophane or Saran wrap to protect it from flies. The following is a suggested scale of points for judging a frame of honey comb.

SCORE-CARD

Points

Suitability of wooden frame	10
Cleanliness of wooden frame	15
Completeness of fill	25
Completeness of capping	20
Cleanliness and appearance of cappings	20
Quality and flavor	10

Requirements – One comb from extracting super, standard or shallow as specified.

Suitability of Wooden Frame – Frame should be properly nailed, with all corners at right angles and opposite sides parallel. There should be at least two horizontal supporting wires. Frame should be free of knots and splits that would weaken frame.

Cleanliness of Wooden Frame – Frame should be clean, white wood, scraped free of propolis.

Completeness of Fill – The comb should completely fill the frame, and all cells should be filled with honey.

Completeness of Capping – All cells of honey should be completely capped, if possible.

Cleanliness and Appearance of Cappings – Cappings should be white without excessive travel stain and without mechanical damage, dust or dirt. Cappings should present a level, surface over the entire comb.

Quality and Flavor – Comb should be free of any brood or pollen. There should not be any noticeable difference in the honey in different parts of the comb. There should be no undesirable flavor to the honey. Honey in comb should be liquid, not granulated.

"No they don't and that's the point. When you put something up for exhibit you want it to be as pretty as possible. When you tell people, 'Hey there folks, look at this. It is the best that I can do and it is close to perfect, you've got to go out of your way to make sure it is. And if the judge agrees that it is almost perfect . well, you could win first prize. Wouldn't that be something to show your friends at school?" I had great hopes that with some luck the two of us could pull it off.

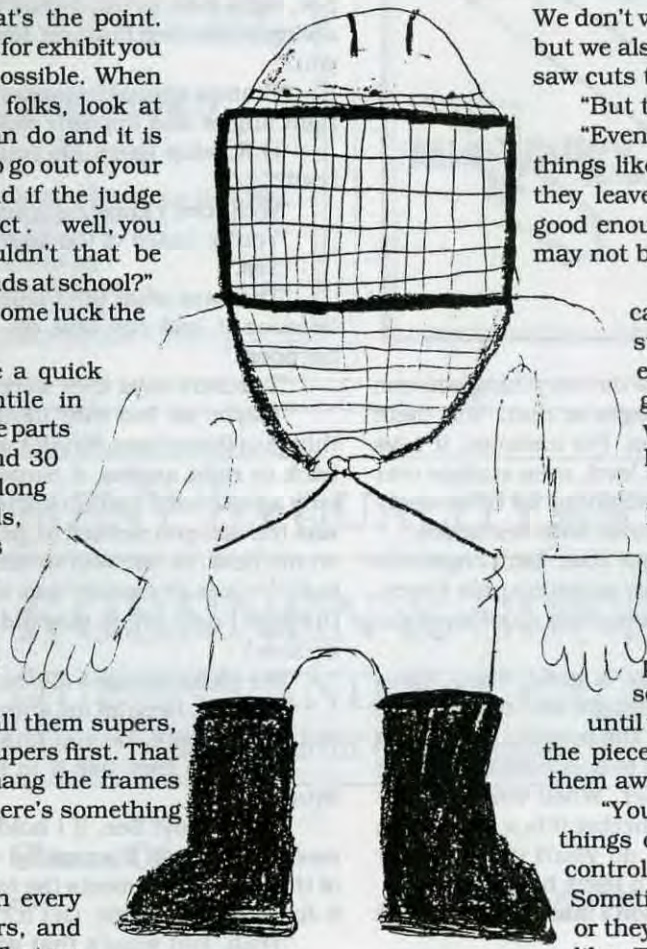
The next day we made a quick trip to Borden's Merchantile in Victoria. There we bought the parts for three shallow supers and 30 frames to furnish them, along with waterproof glue, nails, wire and eyelets. Jeff had his nose in the packages all the way home.

"Are we going to make the frames first or the boxes?"

"Supers. Beekeepers call them supers, not boxes. We'll make the supers first. That way we'll have a place to hang the frames when we're finished. But there's something else we should do first."

"Like what?"

"We have to go through every piece, top bars, bottom bars, and ends to pick out the best. What we want to do is discard any piece that is damaged.



We don't want any splits or knots for sure, but we also have to watch our for chips or saw cuts that shouldn't be there "

"But they're brand new!"

"Even so, we have to watch out for things like that. They're inspected before they leave the factory but what may be good enough for a commercial beekeeper may not be good enough to exhibit."

Jeff was listening. "Look, you can see that many pieces have stains. Some are whiter than others. And we don't want any coarse-grained-wood that might split when we nail it. We'll discard any like that."

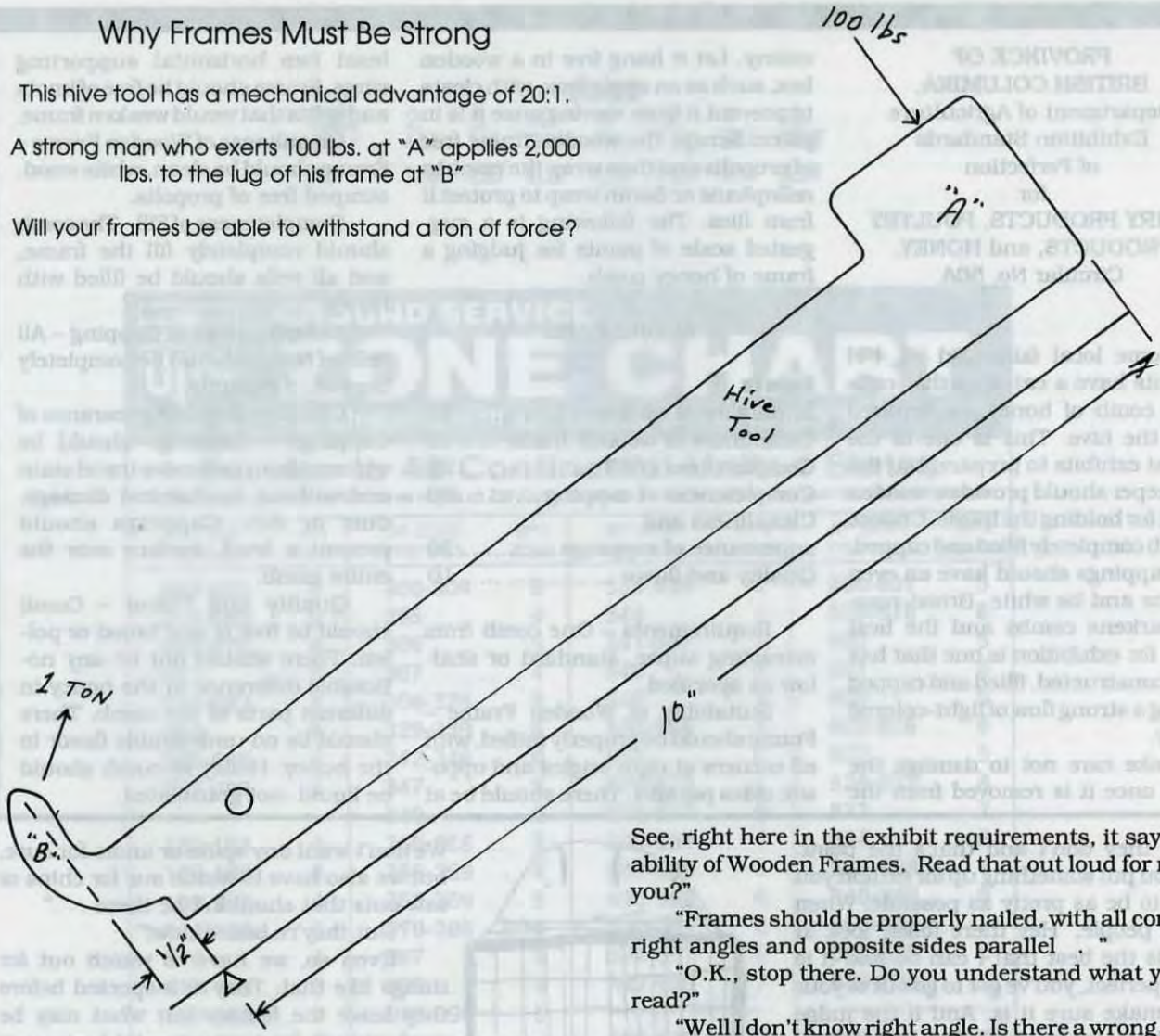
"Like this orangey color here?"

"Yes, you can put that top bar aside."

It took us about half an hour, but in the end we came up with parts for a perfect frame. Then we selected the second best and so on until we had the ten best. We bundled the pieces together with string and put them away in a safe place.

"You know, Jeff, there are many things over which we have little or no control. Take cappings for example. Sometimes the bees don't cap every cell or they don't look as white as we would like. That's why we selected parts for ten frames and not just one. We can't tell the bees, "This

Continued on Next Page



is our best frame. We want you to do everything you can to make this the winner.'" Jeff laughs at that. "But there are lots of ways we can help them. For instance, it says here, 'Cappings should present a level, even surface over the entire comb.' Now that is something we beekeepers can do something about. It has to do with bee space."

"Oh. I remember reading about that. Mr. Langstroth invented that, didn't he? His other name sounds funny. Lorraine. That's a girl's name. His parents must have like names starting with 'L'."

"Lorenzo Lorraine Langstroth. A great man. Times change. Maybe he would have thought our names were funny, too. No, he didn't invent it. The bees did. But you're right. Mr. Langstroth was the first to notice and make use of it. Made beekeeping a lot easier. When you build for bees you must do it their way. Whether it is a super (you don't call them boxes anymore, do you?) or frames or anything else, you do your best to leave bee space."

"But how do we do that? We don't make the parts. We just put them together."

"Yes. But it's how we put them together that counts. See, right here in the exhibit requirements, it says 'Suitability of Wooden Frames. Read that out loud for me, will you?"

"Frames should be properly nailed, with all corners at right angles and opposite sides parallel . "

"O.K., stop there. Do you understand what you just read?"

"Well I don't know right angle. Is there a wrong angle?"

"You've heard of the 'Right Whale'?"

"Yes."

"That was what the whalers called a particular whale because it had the best oil. It was the right whale to harpoon."

"Teachers says they were wrong to kill the whales."

"Maybe so, but they thought there were no limits to things in those days. Whales were everywhere. But getting back to right angles. A carpenter, or perhaps a mason, long ago called a certain angle a right angle because that was the one you needed to get a wall to stand up straight on the floor, or one wall to meet another wall. When they built houses or castles they wanted the walls to meet at the right angle. When they did that, they said the wall was square."

"We make squares all the time in school. Like that?"

"Exactly. Here let me show you. This tool is what they call a try square. Do you know why?"

"Because they use it to try and see if something is square?"

"Bright boy! See, if I hold it like this where the wall meets the floor it fits exactly. Or over here, where the leg of the workbench meets the top. That means it is square. It has the right angle. Get it?"

"Yeah. But what's that got to do with bee space."

"Let me show you." I went to the opposite corner of the

shop where I kept equipment for repair and picked out a super with the frames still in it. Some of the combs were badly misshapen. "I'm going to melt these down next summer in my solar melter. They're a horrible example of what can happen if you ignore the *right* angle."

"Eeyou. That's gross!"

"Yeah? Well, the bees don't seem to mind, but it sure makes it difficult to remove from the super and it's nearly impossible to uncap a frame like this. Do you see what happened here? The super is old. Not only that, but I put it together without glue. When I was starting to keep bees I was just as impatient as you are now. I didn't want to take the time to glue it. Now, just a few years later it's no longer square. See?" I put the try square in the corner. Jeff looked at the large gap.

"So the frames were hanging crooked and they didn't have bee space or maybe too much bee space?"

"Good lad. That's right. And look at this frame. See how it's propolized to the side of the super? Try and see if it's square."

Jeff took the try square and placed it along the bottom bar. "Wow. It's way out."

"So what have you learned?"

"If you want the best combs you have to start with supers and frames that are square. But you haven't said anything about the part here where it says, and opposite sides parallel' What's parallel, anyway. Boy this is tougher than I thought."

"Well for once you are wrong!" Jeff looks up at me, smiling. "This is the easy part. If you make sure things are square and have the right angle then they will be parallel. You don't have to do another thing to it if you've done it right the first time!"

"Hey, that's great. And if we do it right the bees will make "

"Just like it says here in the pamphlet. The bees will cap the honey level and even over the entire comb."

"Because of bee space?"

"All because of bee space!"

Next time we'll put the frame together, and get ready to make 'the perfect frame'.

Vincent Doyle is a beekeeper, free lance writer and adamant supporter of teaching kids what's 'right'.

BEES IN THE UPPER MIDWEST

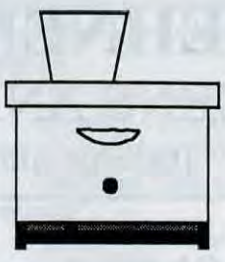
marla spivak

I'm a beekeeper at heart who has been trained to do science. After keeping bees for the last 20 years in places ranging from South America to Kansas, and living the last several years in Tucson, Arizona I vowed I would never, ever move to a cold place again. Naturally, the perfect job for me appeared at the University of Minnesota – so much for vows. A couple of weeks after moving to Minnesota in March 1992, I sat in an auditorium in the Entomology building, listening to Dr. Basil Furgala give his last presentation of the Beekeeping Management Short Course. Basil has made a great contribution to honey bee research and management. His work spans a wide variety of topics including treatment of Nosema, sacbrood virus, sunflower pollination, overwintering in the north, tracheal mite control and comparison of different bee stocks in Minnesota. A series of unfortunate medical problems has left Basil disabled, so he is not able to teach and do research anymore and I was hired to take his place – an honor and a challenge. I was happy that both he and his last student, Dr. Steve Duff, agreed to teach the course one more time. That way I could learn techniques for northern beekeeping straight from the masters and continue to teach the course in future years.

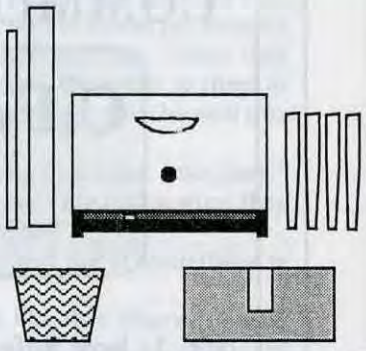
I had to grin when Basil said he was going to teach everyone in the class of over 50 people THE BEST way to keep bees in Minnesota. If they followed exactly what he told them to do, there would be no problems. They would be successful beekeepers immediately. We all know the beekeeper's first credo is that every beekeeper has THE BEST way of managing bees. The second credo is that the only thing which beekeepers can agree on is that they agree on nothing. The irony of this is that bees don't need to be managed at all. They lived for millions of years in fine style before man evolved. But maybe bees need a little help to make it through a Minnesota winter, and that's what I was here to learn.

I've now gone through two cold, rainy summers and two arctic-like winters keeping bees here, with expert help from my technician, Gary Reuter, a local Minnesotan who adheres to Basil's management scheme on his own 60 colonies. When I called Basil and asked if it would be O.K. if I wrote about his management scheme for *Bee Culture*, he was incredulous, "You mean you're going to endorse my system?" "Absolutely," I said. I'm now a believer. His system works great in Minnesota. But it won't be THE BEST system until I add my own touches.

Step 1
Assemble equipment and order package
(Jan-May)



Step 2
Set up Apiary
(mid April)



Step 3
Hive Package
(mid April)

Preparing to hive packages in the snow. Note feeder pails with sugar syrup on right.

Spraying the package liberally with sugar syrup before shaking bees into hive.

In all seriousness, the most successful colony management system is based on the biology and behavior of the bee, not the whim of the beekeeper. Basil's four principles of productive beekeeping, which are ultimately rooted in the biology of the bee, are:

1. Every colony must be protected in manageable equipment and be located in a good apiary site.
2. Every colony must have a young, prolific queen.
3. Every colony must have adequate food reserves at all times.
4. Every colony must be kept disease-free.

For the 90s, I would add the following two principles:

5. Every colony must be kept as free of tracheal and *Varroa* mites as possible.
6. Every colony must be as "European" *as possible* (i.e., they must have no or very, very low of levels of "Africanization").

Basil calls his technique the "Horizontal Two-Queen System." I think he calls it this because he's originally from Winnipeg, Canada where they run many colonies as vertical two-queen colonies. He said he got tired of having to stand on a ladder to harvest honey supers, so he decided to come up with a more reasonable method to manage large colonies. And large they are. I was not prepared for how LARGE colonies of bees get in summer in northern latitudes, and how fast they build up in spring.

Basil's system begins by purchasing a package of bees through the mail in early spring. Actually, it begins with a minimum of two packages. That way you can compare colony development and increase your management options if problems should arise. You want the packages to arrive 4-6 weeks *before* the fruit tree and dandelion bloom in mid-May. That means you order a package so it arrives in mid-April. To my surprise (and I'll admit, horror) there is still snow on the ground and it may be 40° when the bees arrive in April. Why not wait until the dandelions and fruit trees are in bloom and the weather is decent before hiving a package? The reasoning is rooted in the biology of the bee. If you hive a package on April 15, for example, the queen will probably start laying eggs within several days; let's say April 20 to be on the safe side. It takes 21 days for a worker to develop from an egg to an adult; that's May 1. During this time, the population in your new little colony dwindles because the workers that arrived in the package are aging and dying a natural death, and new bees haven't emerged from their cells yet. This is a scary time for new beekeepers as you watch your colony get weaker rather than stronger. But hang in there. After another 2-3 weeks, or mid-May, the new bees will be of age to forage outside the colony for nectar and pollen. By this time the dandelions and fruit trees are in bloom and your new foragers have plenty of pollen and nectar. Now the colony will start growing quickly, and by July, when the main honey producing plants, the clovers, start to bloom, your new colony will be booming and will gather large amounts of nectar.

If you hive a package in mid-May, your colony will go through its dwin-

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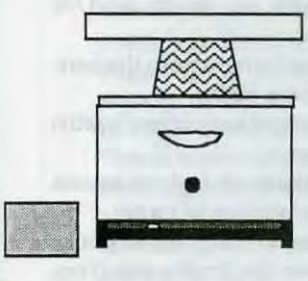
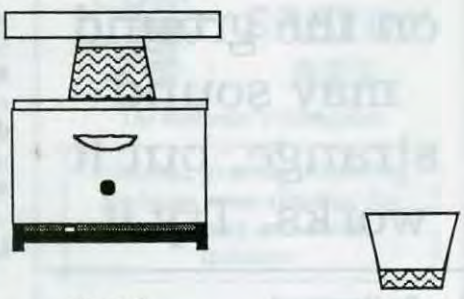
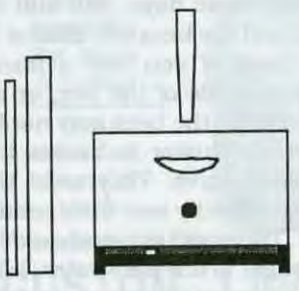


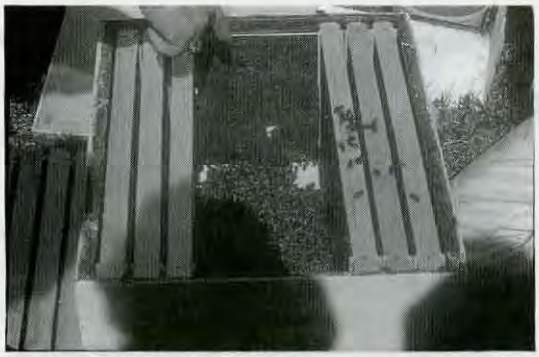
Step 4
Feed Package
(same day)



Step 5
Check Feeder
(next day)



Step 6
Check for eggs and feed
(7-10 days later)



Basil Furgala says: "Gently spread the bees out on the bottom board like making pizza".

Feeding pollen substitute to a newly hived package of bees. Colony on right has a gravity feeder inverted over the inner cover. An empty super should be placed over the feeder pail.

MIDWEST ... Cont. From Pg. 101

dling stage right when the good spring dandelions and fruit trees are in bloom, and by the main nectar flow in July, your colony won't be nearly as strong. So, you have to trudge out to the bee yard in the snow in April to hive a new package. If you're from Minnesota, you wear tennis shoes and a t-shirt to do this because the weather feels just fine. If you're me, you wear a coat, warm hat, wool socks, rubber boots, and you hide your disbelief.

How are these 7,000-10,000 bees that just arrived in a package from the sunny South going to survive in Minnesota from mid-April to mid-May? If you've picked a good location, willows and maples will provide an early source of pollen before the dandelions bloom. It's also good to provide your bees with a pollen substitute (available through most bee supply sources). For nectar, it's critical that you feed your bees non-stop until fruit trees and dandelions are blooming. Basil advocates the use of gravity feeders, or plastic buckets with tight fitting lids punched with 1/16" holes, inverted over the hole in the inner cover. This is because the nights, and some days, will still be very cold, and the bees will cluster to generate heat. If you use a frame feeder on one side of the box, or an entrance feeder, the bees may not be able to break cluster to access the syrup – and starve. They need the sugar syrup directly over their heads, like an IV. The sugar syrup should be one part sugar to one part water (1:1).

Two gallons of the syrup you feed should be medicated with fumagillin to control nosema disease. Basil did a lot of research on nosema, and his data shows very clearly that it's important to feed fumagillin to package bees in the spring and to all colonies before winter. Treating for nosema is particularly important in northern climates.

I'm assuming here that you've picked a good apiary site – one protected from north and northwest winds, has good air circulation, is close to water, is not too close to dwellings or driveways and is accessible by your vehicle even in wet weather. If you are just starting buy standard Langstroth equipment, preferably new so you avoid purchasing somebody else's problems with disease or pesticide residue.

I'd like to take you through THE BEST system for keeping bees in the upper Midwest, step by step. These instructions on how to hive a package come straight from Basil's Basic Management Short Course manual.

Admittedly, installing packages when there is snow on the ground may sound strange, but it works. Try it.

I. Be Prepared

a. Packages should be ordered in December or January (certainly by February). Purchase packages with clipped and marked queens. Packages should contain miticide strips. A 2-lb. package should be hived about a month before the fruit trees and dandelions bloom where you live.

b. For each package of bees ordered have the equipment for a "one-story" hive assembled, painted, and set up on location before the bees are scheduled to arrive. Be sure to keep all openings closed.

II. Care of the Package After Arrival

a. Hold in a dark, quiet place, preferably at 50-70°F. Take care not to chill or overheat the package.

b. Provide plenty of feed by spraying 1:1 sugar syrup on the screen cage as long as the bees continue to consume it.

c. Hive the bees as soon as possible in the late afternoon (early morning is O.K. if weather is cool and/or it is raining or snowing).

III. How to Hive A Package

a. Do not use smoke when hiving packaged bees.

b. Position entrance reducer using smallest opening. Plug this opening loosely with grass when hiving packages on warm and/or sunny days.

c. Remove four frames from the center of the hive body.

d. Spray packaged bees literally with sugar syrup.

e. Jar the package sharply to knock bees to the bottom of cage.

f. Pry the wooden lid off top of package. Remove the feeder can from the package and set it aside.

IV. "Direct Release" Method of Queen Introduction

a. Remove the queen cage from

package; check to make sure queen is alive. Put the queen cage in a safe place (e.g., your pocket).

b. Spray bees in package with more sugar syrup.
c. Shake bees into the hive and spread them out on the bottom board, using your hive tool.
d. Spray queen with sugar syrup.
e. "Direct release" the queen by lowering the queen cage into the hive removing staple and gently peeling away the screen. If queen is clipped you avoid a potential problem, namely, the queen flying away.
f. Carefully replace the four frames.
g. If natural pollen is not available, feed pollen substitute when hiving packages.
h. Provide the hived bees with one gallon of 1:1 sugar syrup containing the antibiotic fumagillin. Feeder pails used over the inner cover are strongly recommended.

V. Day 1 After Hiving Packages

a. Check feeder pails to make certain bees are obtaining sugar syrup. Do not disturb colony unless you suspect bees are not consuming the sugar syrup.

VI. 4-7 Days Later

a. Conduct a brief colony inspection, using smoke, to determine queen acceptance. The presence of eggs will indicate the queen has been accepted.
b. As soon as the bees have consumed the first gallon of sugar syrup (approximately 7 - 10 days) feed a second gallon of medicated sugar syrup containing fumagillin. Give first treatment of terramycin (TM). A total of four TM treatments will be given in the spring to package colonies.
c. When the second gallon of medicated syrup has been consumed, continue feeding *unmedicated* sugar syrup until a continuous supply of nectar is available in the field (dandelion nectar flow). This is especially important when starting with foundation. Generally, a total of 20-25 lbs. of granulated sugar (5-7 gals. of 1:1 sugar syrup) is required per package.

In the upcoming months, I'll continue explaining Basil's Horizontal Two-Queen System. However, I'd like to leave you with some thoughts that really bother me about beekeeping these days. You have just purchased a brand new package of bees. You feed them fumagillin for nosema. Basil always advocates using terramycin as a preventative for the bacterial diseases, American and European foulbrood. These days, you should probably treat that package for tracheal mites with menthol (as it's the only registered treatment) and for *Varroa* mites with fluvalinate (Apistan strips). That's four treatments: two antibiotics, one repellent, and one pesticide! Is this healthy? What are our alternatives? The next nagging thought is: In 5-10 years, how can you be sure the queen inside your new package is not Africanized? If you're sure the new queen is reared from certified European stock, how can you be sure she didn't mate with Africanized drones? These are the thoughts that kept running through my mind as I sat through the short course. If I can add anything to this BEST system, it will be a way around all the chemicals, and a way to avoid inadvertently using Africanized stock up here in the cold country. Much of my current research is directed to these ends.

But even after all this, there's more. More medication, and more challenges. Next time we'll solve some of these.

Marla Spivak is Extension Apiculturist at the University of Minnesota, St. Paul. She has worked with African bees in the tropics and studied bees in the U.S. desert S.W. This is her first article for Bee Culture.

HOW TO MAKE A PASCHAL CANDLE

greg ferris

Here in Maryland when we think spring we think Easter. And what does Easter have to do with bees? The bees produce the wax used to make paschal candles. It takes a little time and patience to produce these works of art in wax, and some special equipment will have to be made but the end result makes it all worthwhile.

Paschal candles are usually made of processed beeswax. The church requires that the candle be at least 51% beeswax. A good wax mixture is 51% beeswax, 1% stearic acid, and the remainder paraffin. You will find that a yellow paschal candle is easily accepted by the church as most don't believe white ones contain any beeswax! They will also take special pride in candles made by their parishioners.

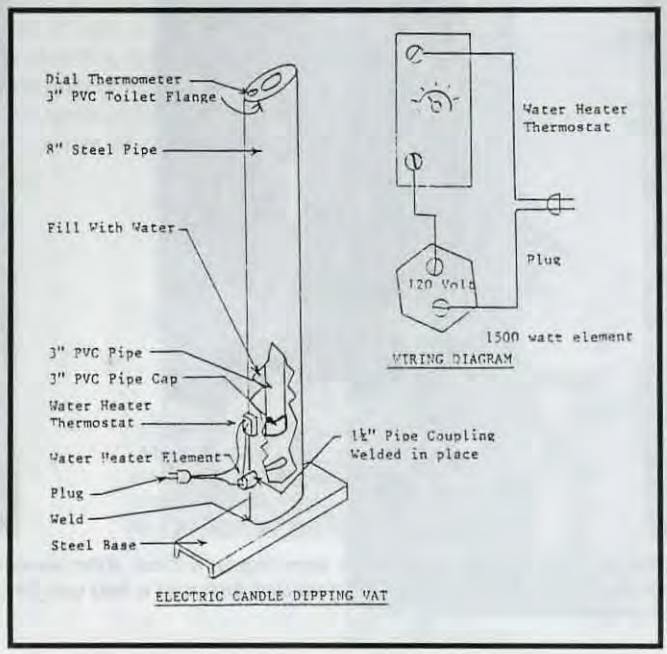
To make a paschal candle you will need a dipping vat that is at least 36" deep. Mine is made out of a scrap piece of eight-inch steel pipe welded to a piece of channel. Perhaps someone in your church is a general contractor with these scrap items laying around. Near the bottom of the pipe a 1-1/4" pipe coupling was welded in place to receive a 120-volt water heater element. Above the element a water heater thermostat was attached to the pipe to control the temperature of the water bath. A 36" piece of three-inch PVC pipe with a toilet flange glued to one end and a cap glued to the other end provided the vessel to hold the wax. The flange must be secured to the steel pipe to keep it from floating. I did this by welding a couple of bolts to the inside of the steel pipe. The steel pipe is filled with water and the unit plugged in.

While the wax is melting the wick is prepared. An in-line fishing weight is tied to each end of the wick. The wick should be six inches longer between the weights than the finished candle length. A hook is attached to a rope which is strung through a pulley over the vat. This makes dipping the candle a very simple job and you won't have to stand precariously on a chair.

Now the dipping begins. After each series of several dips the candle will have to be turned over to keep it from tapering. When the candle reaches an inch and a half in diameter it is time to quit for the day and allow it to completely cool. If you don't, the weight of the soft wax will cause it to slide off the wick. On the second day the dipping is continued until the candle reaches two inches in diameter. The candle is then drawn through a two-inch die each time it is dipped to get it perfectly round for the length of the candle. I used an upside-down canning jar funnel for the die. When you are satisfied with the shape of the candle, which is a little rough from the die, dip it two or three more times and it will become smooth. Allow the candle to hang and cool for another day.

Working on wax paper carefully cut the candle to length using a hot knife. Now it is ready to receive the decorations. Mark the patterns on the candle with a felt tipped pen and carve the patterns into the candle with a small gouging tool. These tools are readily available at any hobby shop. You might want to practice on the sections you removed before tackling the finished work. Colored wax is then melted and applied to the pattern using an eye dropper. Keep the wax and eye dropper hot or the wax will set up in the eye dropper. Gold leaf is applied to the gouged out cross and anywhere else that it is desired. As you can see in the picture of my finished candle a gold star is above blue water. This candle was made for "The Star of the Sea" church.

The red nails are made by nailing small tacks, such as frame nails, to a piece of wood and dipping them in



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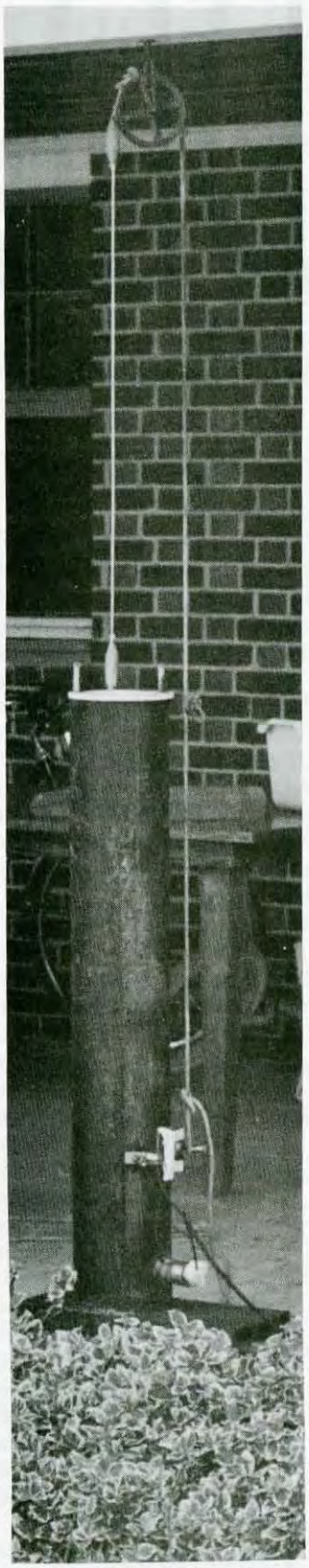
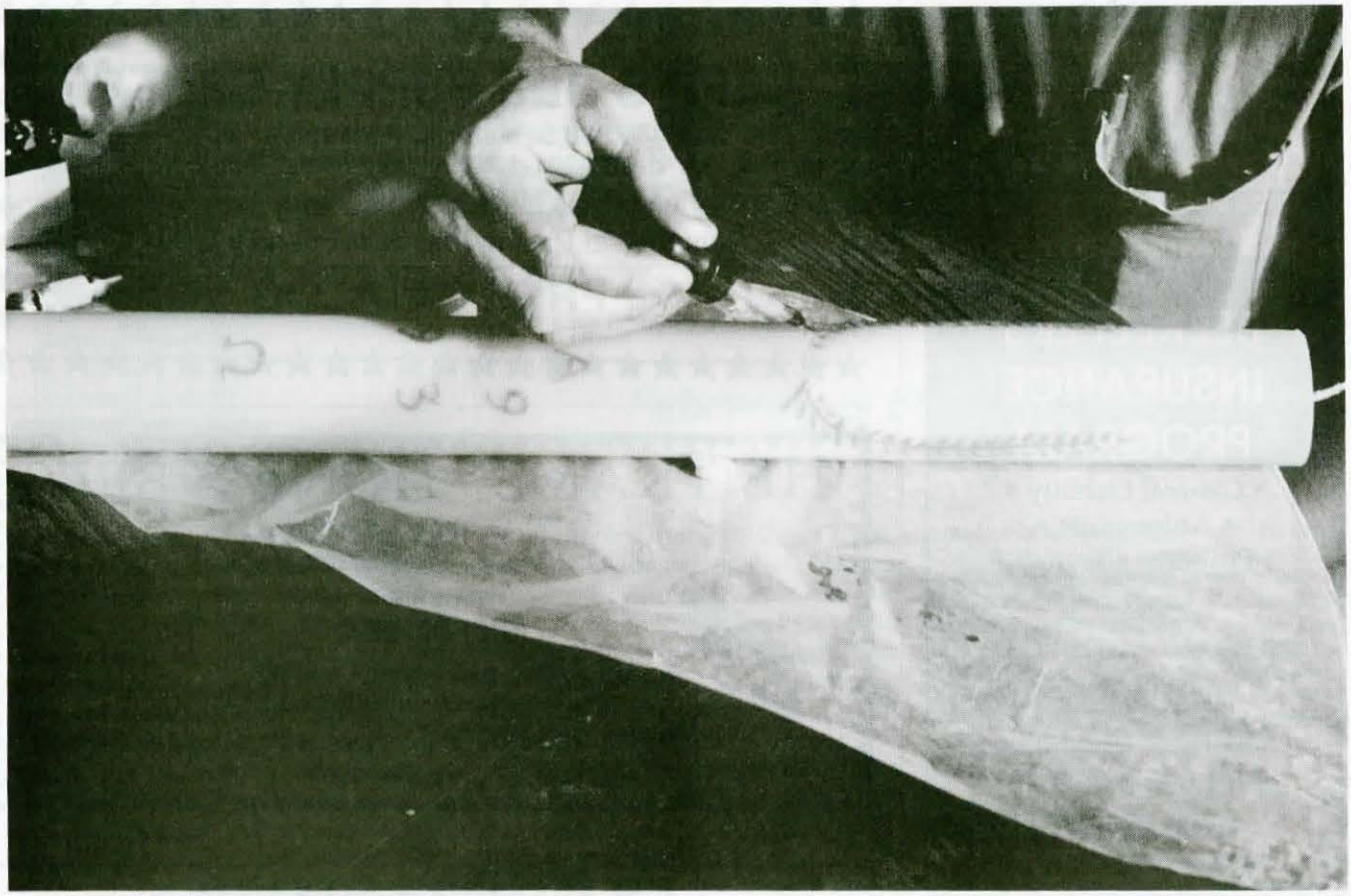
PASCHAL CANDLES ... Cont. From 105

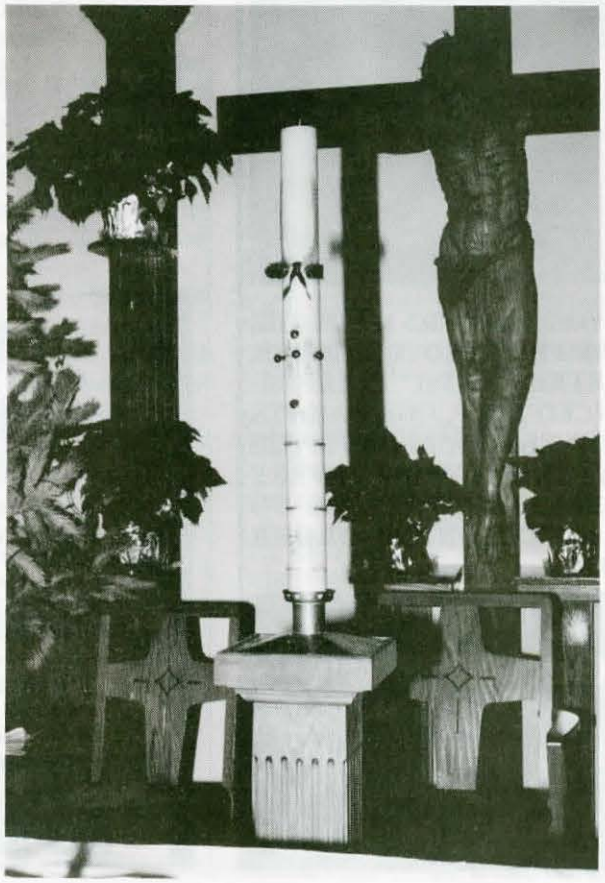


The dipping process is simplified by using a pulley instead of standing on a chair. After several dips the candle needs to be reversed to it doesn't become tapered. After it reaches and inch and a half quit for a day to let it cool.

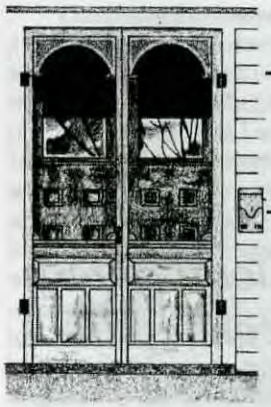


To detail, carefully carve out the decorative symbols and fill them with colored wax (paraffin) using a hot eye dropper. A steady hand helps here.

colored wax. While they are soft they can be shaped. After cooling they are pressed into place. The red bow was made by placing red wax into a small container of water. The container was heated in the microwave until the wax melted. It was then allowed to cool and a small sheet of wax was obtained. Strips were cut from the sheet, molded to the desired shape, and pressed onto the candle. The rose buds were made from sheets of wax worked under a hair drier. The very center of the rose is a small ball of wax on a small nail similar to the red nails on the cross. Each petal is pressed into place and shaped by hand while it is soft. The four green sepals are made in one piece and shaped around the rose bud.



A paschal candle made locally is a source of pride for any church during the Easter season.



HOME HARMONY

ann harman

February is Fondue Month!

February — what a strange month, full of "holidays" which are fun to celebrate. Parts of the country are full of snow while other sections are looking at springtime and the beginning of another growing season. In some areas the honey bees are still clustered, while in others they are flying and beekeepers are counting their to-be-filled honey jars. So what is a good project for February? If you are still in a wintry area as I am, how about the fun and games of cleaning up some bookshelves and files? Actually it is fun — you find all sorts of forgotten treasures — and some less-than-interesting trash. I threw the trash away and will share with you a forgotten treasure — a little recipe book about fondues.

At one time, not too many years ago, everyone had a fondue pot. Although Cheese Fondue was the main item made, some adventuresome cooks made meat fondues and dessert fondues. After a time the cooking fad went elsewhere and the fondue pot was pushed to the back of a cupboard, then to a box, and then very possibly it was relegated to a yard sale. So now you are without a fondue pot and I am about to give you some suggestions for fondue fun this month. The lack of a fondue pot should not stop you from making some of these recipes. Do you still have a double boiler? Or did that follow the fondue pot to some unsuspecting purchaser? If you have the double boiler, then we'll use that for the fondue sauces. If not, can you make a double boiler out of a couple of saucepans? Good. Just be careful since the bottom pot will contain hot water.

Did you know that fondue forks are for dipping, not for eating? A fork used for dipping can get quite hot and give your lips a nasty burn. Dip the piece of food, then transfer it to a plate and eat it with an ordinary fork. The real fondue fork has a blunt barb on each tine to keep the piece of food from falling off while in the dip. An ordinary fork or cooking fork will work just fine unless the dip is very thick and the piece of food rather crumbly. Keep a long-handled cooking spoon handy for fishing lost chunks out of the dip. However, you do not always need a fork. If you are serving cookies, crackers, chips or crisp foods, give each person a bowl of the dip and use the fondue pot to refill the bowls.

Why this rekindled interest in fondues? Well, the sauces for dessert fondues can be made with honey — and the sauces are so much better made with different flavors of honey than ones made with sugar. Any left-over sauce can be used to make an ice cream sundae.

All sorts of things can be used to dip in the sauce: day-old cake, doughnuts, sweet-dough buns, drained pineapple chunks, apple wedges, orange sections, banana chunks, bite-sized pieces of avocado, fresh cherries and strawberries, graham crackers, soda crackers, cookies, raisins, popcorn, peanut-buttered bread, and whatever else you can think of. You might like to make these bread sticks for something different to dip.

Orange Squares

1/4 cup butter
1/4 cup orange juice
3 tablespoons grated orange rind
1/2 cup honey
6 slices white bread with crusts removed

Place butter, orange juice, orange rind and honey in a saucepan over low heat. Cook and stir until the butter has melted and the mixture is well blended. Brush each slice of bread on both sides with the orange mixture. Cut each slice into 4 strips and then cut each strip in half crosswise. Place the rectangles on a buttered cookie sheet and bake at 350° for 10 minutes or until slightly browned. These are excellent with chocolate-flavored fondues.

Chocolate Fondue

Now for some sauces. If you have a favorite sauce, you can use it for fondue and if you need to substitute honey for sugar in the recipe, there should be no problems doing so.

1/3 cup cocoa
1/4 cup water
1-1/2 cups honey
2 tablespoons butter or margarine
2 teaspoons vanilla

Place the cocoa, water, and honey in a metal fondue pot or a saucepan. Cook, stirring, until the mixture thickens somewhat and coats the spoon. Turn heat to very low. Add butter and vanilla and mix thoroughly. Serve with vanilla cookies or bite-sized pieces of day-old chocolate cake, white cake or angel food cake. Makes about 2 cups.

Lemon Fondue

Yes, chocolate is great but try this sauce for variety.

1/2 cup honey
1 tablespoon cornstarch
1 cup water
2 tablespoons soft butter or margarine
1 teaspoon grated lemon rind
1 tablespoon fresh lemon juice
1/4 teaspoon lemon extract

Mix the water and cornstarch together. Add honey and heat mixture over medium heat, stirring to mix well. Add butter, grated rind and lemon juice. Stir until all is thoroughly mixed. Cook,

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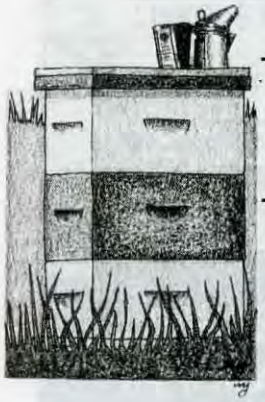

BEE TALK

richard taylor

"You can be very sure there will be a loud outcry on the part of physicians against beekeepers who give bees to people who use them. But they will be shouting to the wind."

One of the more resourceful beekeepers in our bee club, Mr. Bob Kime, proved his apicultural skills this past season by getting a good big crop of honey. What makes this remarkable is that no one else did. But Mr. Kime had a bit of luck with him, too. His crop was almost entirely from alfalfa and came late in the summer. That means that some farmers nearby planted a lot of alfalfa and then left it unmowed. Usually they cut it just as it is starting to bloom, to the distress of beekeepers.

What interests me more about Mr. Kime's work with bees, however, is his recent experience with apitherapy, as it is called; that is, the treatment of arthritis with bee stings. A friend of his was suffering from arthritis, and Mr. Kime suggested he try the old bee sting approach, which consists of pressing a live bee, with tweezers, against the exact spot where the arthritis manifests itself, repeating this from time to time. The result is, of course, a bee sting at that exact spot, and the resultant injection of a bit of bee venom.

The effect appeared quite dramatic. The fellow started improving markedly. Word spread, and in the course of time nine more arthritis sufferers came around to Mr. Kime to ask for a few bee stings. Every one of them improved. The results were in some cases hardly short of amazing. One gentleman found himself able to do things with his hands that he had not been able to do for years.

Although I have had no direct experience with bee sting therapy, there is no doubt whatever in my mind that it works, at least with some types of arthritis. My guess is that it activates the autoimmune system in such a manner that the body itself repels the disease, but I don't really claim to know, and I do not want some physician writing in to say I don't what I'm talking about. I admit that.

The term "arthritis" covers a vast array of disorders, perhaps a hundred or more, many of them not well understood at all. It is known, however, that while medical progress has been made with respect to some of them, it has been far from impressive with respect to others. And some of the methods used by physicians, such as those involving salts of metallic gold, have very serious and lasting side effects.

There has been an interesting sequel to Mr. Kime's efforts in this area. One of the gentlemen who had tried the bee sting approach told his physician about it, and the physician was indeed impressed, perhaps even astonished, at the apparently beneficial result. Now this physician happens to be Mr. Kime's family doctor too, so he phoned Mr. Kime to say that he was pretty impressed by what he had seen in this patient but, that Mr. Kime was "practicing medicine without a license" and was going to have to stop. And this surely raises a whole new issue. Is a beekeeper, who practices apiotherapy, guilty of practicing medicine without a license?

It all depends. If you were to pass the word around that you could perform this service, claim that it had curative value, and charge for the service, then you would be on very risky ground indeed. If, on the other hand, someone, perhaps a friend, were to come to you and ask you to let him have a few bees, so that he could see whether they might do his arthritis any good, then you certainly would not be practicing medicine by complying with his request. You would merely be giving him a few bees, which you have every right in the world to do. You are making no claims and charging him nothing.

The attempt to alleviate arthritis by the use of bee stings belongs to the realm of what is called "folk medicine," that is, nostrums involving everyday things such as herbs, bee stings, whatever, that ordinary people have discovered through experience to be effective. Honeycomb cappings, for example, have been found to be effective against certain allergies. Some of my customers say the same about comb honey. If they want to buy comb honey from me for that purpose, that is their business, and I am in no sense practicing medicine by selling it to them. For years a lady used to stop by my house for propolis. She said that eating a bit of it every day had tremendous beneficial effects. I was happy to give it to her, because I enjoyed having her stop by. And surely anyone would make a fool of himself if he claimed I was some-

how practicing medicine. I never told her to eat propolis.

The evidence that bee stings, *properly applied*, are sometimes effective against certain types of arthritis is, in my opinion, overwhelming. For anyone to suggest that I am not entitled to hold, and to express, that opinion, would be to betray a deep ignorance about what our beautiful country and its traditions of free expression are all about. And if anyone wants to try that approach on himself, then I, and you, are perfectly entitled to advise him how to go about it. What we are not entitled to do is set ourselves up as would-be physicians claiming that we have a cure for arthritis or anything else. Above all, we are not entitled to do this and then charge a fee for a service.

Physicians are, of course, like the members of any guild or profession, very jealous of their turf. I suspect some day the use of bee venom against arthritis will be recognized by them as sometimes effective. But you can be sure no physician is going to take live bees and sting his patients with them, even if this were to prove the best approach. He would look too much like some sort of witch doctor. What is likely to happen instead is that bee venom will come to be sold in tiny vials distributed by pharmaceutical companies, used only by physicians and injected with a syringe. That, you can be sure, will be very expensive, and there will be a loud outcry on the part of physicians against beekeepers who give some arthritic friend a few live bees and show him what to do with them. They'll say we are practicing medicine without a license! But they will be shouting to the wind. Bees are a part of nature, and what we do with them, short of hurting other people or encroaching on the same rights they share with us, is nobody's business.

HOME ... Cont. From Pg. 109

stirring constantly, for about 8 minutes or until thickened and transparent. Stir in lemon extract. Turn off heat and serve immediately with bite-sized pieces of yellow or white cake or lemon snap cookies. Makes 1-1/2 cups.

All the above recipes were from *The Practical Fondue Cookbook* by Mettja C. Roate

Honey Sauce

Although the recipes have been for fondues and dipping, the sauces can be used for anything that needs a sauce: cake, ice cream, fruits. Here are two sauces that also serve a dual purpose — you can use them for dipping or pouring

1/4 cup hot water
1/2 cup honey
1/4 cup chopped nuts
1/4 cup minced candied orange or lemon peel or candied ginger

Combine and stir well. The sauce can be served warm or chilled. Makes about 1 cup.

Honey Mint Sauce

This next sauce is delicious with mixed fruits. Serve it as a dipping sauce, or marinate fruits in it and serve as a dessert. Try different flavors of honey, especially orange blossom or citrus honey in this recipe. The flavor of the honey will enhance the flavors of many fruits, especially strawberries.

1/2 cup orange juice
2 tablespoons lemon juice
2 tablespoons honey
1/8 cup finely chopped mint

Combine and mix well. Makes about 3/4 cup.

These two recipes are from *The Joy Of Cooking* By Irma S. Rombauer

Honey Lime Sauce

Limes are not such a common ingredient, which is a pity since they have a nice refreshing flavor which combines well with many fruits. Try this sauce recipe for dipping fruits.

1 tablespoon whole wheat flour
1/4 cup fresh lime juice
1 cup honey
1 teaspoon grated lime peel

Combine flour and lime juice in pan. Slowly add the honey and place over low heat, cooking until the mixture thickens. Stir in the lime peel. Makes 1-1/2 cups.

The Book Of Honey
Claude Francis & Fernande Gontier

Perhaps by now you've remembered that the fondue pot didn't make it to the yard sale after all. Dust it off and have some fondue fun!

INNER ... Cont. From Pg. 72

good looking observation hive, well stocked with healthy, active bees, lots of honey, pollen and brood, a marked queen, clean glass and handsome covers is attractive to look at, easy to teach from and a good example of what beekeeping is about.

You, or your association could, and certainly should consider working with or sponsoring an exhibit at your nearest Nature Center. The advantages are numerous. First, *you* get to do the bee work. That's why you're a beekeeper, right? Because you get to do the bee work. When you're there as an individual you can take the family or a neighbor or a friend who gets the chance to look at the flora and fauna and minerals and maps while you do your thing. Or, make an afternoon or evening of it with your group. Many hands and all that, plus the whole bunch of you can take advantage of what's inside. A great place to hold a meeting three or four times a year, and the entertainment's free!

Second, you don't have to do the teaching. Somebody else does. All day, every day. And they do it right. They're objective, sincere and pragmatic. With a little coaxing from you, and maybe a few dollars to help, they'll make information sheets available about beekeeping, your group or whatever.

I ask you – What could be better? *Great* P.R. for you, your group, and our industry, and somebody else does the work.

This spring go out and give Jeff, and all the rest of his kind a hand. It will be the best time you can spend.

For more information on observation hives and activities you can use, contact Dr. Dewey Caron at the University of DE, 248 Townsend Hall, Newark, DE 19717

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We reported on the first step of the ITC (International Trade Commission) hearing here last month, when the "for" and "against" arguments were heard for putting quotas or tariffs on honey coming into the U.S. from China. It was a good first step with the pro side strongly supported by well-informed counsel, a broad cross section of the producing and to some extent the packing industry, and a legitimate argument.

The against side did a pretty good job of supporting their cause, too, and when it was all over the commission was left to weigh the results and make a recommendation. In early January they released their opinions.

Yes, opinions. They do not need to speak with one voice, this panel of six, and they didn't.

Three of them, however, did arrive at the same conclusion. They recommended a 25% ad valorum tax be placed on the first 12.5 million pounds that enters the U.S. *each quarter*. For everything over that, a 50% ad valorum tax be added.

The others presented a mixed message. One proposed a 10% ad valorum tax on all honey over 60 million pounds imported, while another suggested a 10% tax on *all* Chinese honey coming into the U.S.

These taxes are F.O.B. China, so if honey is being bought there for 30¢/pound, the cost to the buyer goes up from there – 25%, 10% or 15% – depending. When this recommendation came down China was in the neighborhood of 30¢/pound (some neighborhood!), so, a 25% tax would mean it goes to 37-1/2¢/pound. Freight, I guess, is extra.

The math for the rest is up to you, but it isn't terribly encouraging. Last year we imported just over 72 million pounds from China (my last figures, anyway), so you can calculate what the effect will be, and it does take a calculator.

Needless to say this isn't as much as some would have liked, nor as little as others had hoped for. I'm not even sure it's a good compromise. Why? Well, three reasons actually, three *very different* reasons.

First, to offset the tax, sellers of honey in China need only lower their price. Rumors have it that 20 cent honey is possible. Twenty cents! So much for the tax and any gain for producers here.

Second, this year some markets may again open for Chinese honey that weren't in the last year or so, thus siphoning off some of the excess they seem to have. These include Europe and Asia plus an ever-so-slightly increasing domestic market. Less honey to sell either drives up the price, making the tax a moot point, or, to meet U.S. demand honey from other countries will fill the gap. A no-tax solution.

And third, there's a group not at all pleased this occurred. Not the importers or packers (though I'm sure some feel this way), but honey producers. In the extreme their argument is that the tariff is just another form of subsidy, another government protection for a few big producers. Their thinking goes that it's time the U.S. joined the rest of the world and compete profitably or get out. Strong stuff, yet some are doing just that – competing profitably, or getting out.

To some extent all three will occur. And, ITC has yet to make a proposal to the trade representative, who in turn advises the President, who has until early March to make any decision he wants. Many slips and all that.

I don't see honey prices going up dramatically in the near future though. The big guys are at each other's throats for space and volume and that hurts everybody except the niche marketer. The midsize operation is going to have to get leaner and meaner and find some more ways of squeezing another nickel out of every hive.

It's February now, maybe a bit late to start, but that nickel (or more) could be made pollinating this spring. Six colonies to a small orchard gives a $120-150 in May. Not bad. If this is the only way, you need to start now – go to growers' meetings, make contacts, evaluate your bees and your equipment and your time and your muscle and your bottom line.

You may be surprised what a little investigation will turn up, and turn into.

Kim Flottum

?Do You Know? Answers

1. **True** Individual honey bees are so specialized for particular tasks that they are unable to survive for any length of time when separated from the colony.
2. **False** The queen honey bee has considerable influence on the orderly life processes in the colony. She, however, is not actively and consciously guiding or organizing worker bee activities.
3. **False** The chemicals that are produced internally and only effect the individual that produces them are known as hormones, not pheromones. Pheromones are secreted externally and effect other individuals of the colony or same species.
4. **False** "Queen substance" is a blend of at least 5 different chemicals and are produced by the queen's mandibular glands.
5. **True** Young worker honey bees are unable to sting when they first emerge because the sting structure is not developed fully. Their stings apparently are too soft and flexible to penetrate the flesh. Queens, but not workers produce functional venom at the time of adult emergence. Since virgin queens may frequently kill their sisters by stinging shortly after they emerge, the immediate availability of toxic venom is obviously essential.
6. **False** Only the European honey bee, *Apis mellifera* and Eastern honey bee, *Apis cerana* normally nest inside dark cavities with small entrance holes. The other species of honey bees build exposed nests.
7. **True** Many factors both internal and external affect the behavior of individual honey bees. Some kinds of activities are limited by internal physiological conditions associated with stage of gland development. Numerous external factors, i.e. odors, light, sounds, magnetic fields etc. stimulate various responses. The genetic composition of the bee is known to exert a major effect on behavior. Each bee has a tendency to express different behaviors according to their genetic profile.
8. **True** When virgin queens are about 24 hours old, they produce a pheromone that repels workers and other queens. This pheromone is produced for about two weeks and is discharged as a fecal exudate from the rectum.
9. **True** Adult honey bees show aging characteristics. They show a deterioration in flight performance and a change in thermal preference to cooler temperatures, thus move from the center of the brood nest to the exterior regions. In addition there are changes in the functioning of the various glands as the bee ages. All bees do not necessarily engage in all types of activities. Some bees "age prematurely" and initiate field foraging, without having been a guard bee or engaging in some other kind of activity such as housecleaning.
10. C) Corpora allata
11. D) Forelegs
12. Worker, Queen (Drones are not a caste)
13. Two specific genes control the housecleaning behavior of worker bees that remove the remains of dead larvae or pupae from brood cells. Workers with one of the genes uncap the cells but do not remove the dead brood. Workers with the other gene do not uncap cells but remove dead larvae or pupae from cells that have been uncapped.
14. When worker bees fail to construct emergency queen cells and no fertilized eggs or female larvae less than four days old remain as a potential source of constructing emergency queen cells.
15. E) 9-oxo-2-decenoic acid
16. B) Nassanoff pheromone
    E) 9-oxo-2-decenoic acid
17. E) 9-oxo-2-decenoic acid
18. D) 10-hydroxy-2-decenoic acid
19. C) 2-heptanone
20. A) isopentyl acetate
21. Trophallaxis is a characteristic activity in insect societies and is the interchange of materials (food, chemical secretions etc.) between individuals within the society. Trophallaxis is common between workers and also from worker to queen and drones.

There were a possible 25 points this month. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying – you'll do better in the future.

Number Of Points Correct
25-18 Excellent
17-15 Good
14-12 Fair

Gleanings

FEBRUARY, 1994 • ALL THE NEWS THAT FITS

CA HOLDS AHB TRAINING COURSE

A total of 170 Certificates of Training were distributed to participants at the University of California's first training session on Africanized honey bees (AHBs). The training session was held in conjunction with the 104th annual convention of the California State Beekeepers' Association that met the week before Thanksgiving in Palm Springs, CA.

Dr. Eric Mussen

Training coordinator, Dr. Eric Mussen from UC Davis, developed the program in a skeletal form. Then he contacted presenters with experience with AHBs to fill in the details. Dr. Norman Gary from UC Davis, who was a member of the original scientific study group that went to Brazil to evaluate AHB problems, introduced the subject and explained how the Africanized bees came into being. He reported on the physiological, behavioral, and developmental differences between European honey bees (EHBs) and AHBs.

Dr. Anita Collins, who works at the Weslaco, TX, USDA bee research lab, described the differences between the defensive behavior of the two races of bees. Dr. Robert Page, a UC Davis professor, described how defensive behavior is passed along genetically. Excessive stinging turns out to be a dominant trait.

Dr. Robert Page

Next Dr. Page described the strengths and weaknesses of various laboratory methods used to identify bees collected from a hive as European, Africanized, or a hybrid mix. A number of tests are useful for determining parental types, but hybrids are extremely difficult to differentiate.

State government responses to "invasion" by AHBs were discussed by Anita Collins and Eric Mussen. Texas implemented and is maintaining a quarantine program in counties where AHBs have arrived on their own. Arizona considered such a program, but many beekeepers are against it. Consequently, there may be no program. Similarly, in California, it seems that there will be no statewide AHB regulations or quarantines. One reason is financial. California is real short on money. The other part is industry pressure. Many California beekeepers see no advantage in having a program that ties up colonies that need to be moved so frequently. Also, AHBs rarely enter managed hive equipment, unless the equipment is left empty and accessible in the field.

Dr. Gary finished up the session by sharing his ideas on what the future consequences of having AHBs in the area might be. He is most concerned about law suits. Property owners, beekeepers, growers who rent bees for pollination, and others may be held liable if someone gets stung by or near visible beehives.

At some point in time there may be a need for a clear definition of responsible and legal colony management practices versus those practices that may be used to establish negligence in a legal sense. This issue may ultimately focus on efforts by the beekeepers to keep identifiable European queens in their hives, to the extent that practical beekeeping operations will permit. Dr. Gary expects a lot of beekeeping questions to be settled in the courts. The public may demand additional protection from AHBs, leading to new ordinances against beekeeping. Such ordinances may only remove the gentle European bees and not affect the feral AHB colonies. The arrival of AHBs makes beekeeping a "new ball game," according to Dr. Gary. "Give these matters some serious thought!"

DIEHNELT CHOSEN WI B.O.Y.

Walter Diehnelt was named beekeeper of the year for WI at the WI Honey Producers Assn. annual convention at Wausau.

Diehnelt is the fourth generation to operate Honey Acres, which started in 1852 in the Milwaukee area and moved to Ashippun in 1978 from Menomonee Falls. The honey packing line moved in 1980. Honey Acres has grown into an international business since the move to Ashippun. Honey Acres is known for its gift packs and honey candy. Their Honey Mints were named one of the top five in outstanding confection in June at the Fancy Food Show in NY City.

Diehnelt was chairman of the SE District for 35 years and was on the legislative committee for years. He had a booth and display at the state fair when the association didn't even have one.

He conducted experiments with bees and kept beekeepers informed. Over-wintering, moisture in the hive, indoor wintering, different types of hives, queens, management of bees, honey flows and more.

He is willing and capable of talking at the state meetings on various subjects.

Life's Still Sweet

SUGAR DOWN, BUT CONSUMPTION UP

U.S. sugar production in fiscal year 1994 is forecast at 7 million tons, down nearly half a million tons from the record crop in 1993. The downturn is largely due to weather caused lower sugarbeet yields in Minnesota and North Dakota, and a reduced recovery rate. U.S. beet sugar production in 1994 is forecast at nearly 4 million tons, about 54% of the total domestic sugar crop. Cane sugar production in fiscal year 1994 is forecast at about the same as last year, 3 million tons, with Florida producing about half of the national cane sugar output. U.S. sugar consumption is expected to be 9 million tons, up nearly 2%. Per capita refined sugar consumption is forecast at 65 pounds.

NATURESCOPE AVAILABLE FROM NWF. GREAT FOR KIDS

The National Wildlife Federation's award-winning *NatureScope* is a creative activity series designed to help kindergarten to 8th grade educators incorporate science and environmental education into their teaching. The 18-issue series addresses topics such as endangered species, tropical rain forest, insects and geology. Each issue includes about 70 pages of information and activities, stressing knowledge of science, analytical and problem solving skills, and the development of an environmental ethic. The series costs $99 + $4.25 ship. (request item #75908), which includes a free video. Individual issues can be purchased for $7.95 plus $3.25 shipping. Contact National Wildlife Fed., 1400 16th St. NW, Wash., DC 20036-2266; (800) 432-6564.

EMERGENCY PATCH AVAILABLE

Devcon's Zip Patch™ adhesive-based patching system and Magic Bond™ repair putty let you make instant, permanent repairs under the most adverse conditions and with minimal surface preparation.

The Zip Patch system includes an adhesive-impregnated patch that, when activated, repairs damaged metal or PVC irrigation piping, tanks, spreader/mixer wagon slide trays, hopper wear panels, drums and large containers. Zip Patch can eliminate welding in areas where it may be dangerous or impractical, and adheres even on wet or greasy surfaces.

Magic Bond is a new, easy-to-use emergency repair putty that can even be applied to stop flowing leaks. Magic Bond epoxy sticks contain both resin and hardener which are activated when a needed portion is cut off and kneaded between the thumb and fingers. After a few moments, when the color is uniform, simply apply the putty to the repair area – even under water – where it will cure rock-hard in minutes. Magic Bond is ideal for repairing fuel tanks, water tanks and other containers in the field. One or two sticks make a valuable addition to any tool box.

For more information, write to ITW Devcon, Farm & Agriculture Group, 30 Endicott Street, Danvers, MA 01923, or call 1-800-626-7226.

HONEY BOARD NEWS

The National Honey Board will publish its first cookbook, titled *Sweetened with Honey – The Natural Way*, this winter.

The cookbook, published and distributed by Publications International, will be sold at supermarket checkout stands throughout the country starting in February for a cost of $2.95 each. Additional copies will be available from the National Honey Board.

The cookbook contains over 100 delectable honey recipes for tangy salad dressings, savory entrees and oh-so-heavenly desserts! Full-color, mouthwatering photographs are splashed throughout the book for added appeal.

"We want consumers to know that honey is more than a delicious topping for biscuits and toast," said Mary Humann, marketing director for the National Honey Board. "Honey enhances all types of foods – the natural way."

Watch for the cookbook in your local supermarket or contact the National Honey Board at (303) 776-2337 to order by mail. Quantity discounts will be available.

Imported honey products which contain 51% or more honey are subject to the Honey Board's one-cent per pound assessment. "An increased effort is being made to identify products to assure that assessments will be collected by U.S. Customers," explained Bruce Boynton, compliance administrator of the National Honey Board. If you have information on imported products which contain a substantial amount of honey, please call Bruce Boynton or Julia Pirnack at the National Honey board (303) 776-2337.

Display Index

Old Apple Trees

richard dalby

I love old apple trees. love the gnarled look of them, love their stalwart tenacity. And I love the apples they produce.

Time was when any farmstead worthy of the name had its own apple orchard. And these trees produced apples with such evocative names as Maiden's Blush, Northern Spy, Tolman's Sweet, Sops of Wine, and Westfield's Seek-No-Further. Not to mention the Spitzenburg (Thomas Jefferson's favorite apple), Newtown Pippin, Pound Sweet, Grime's Golden, or the Golden Russet. These and many other old apple varieties are largely missing from the orchards of today.

Along a fence row near one of my apiaries, two antique apple trees still survive. They are full of dead limbs and one of them has a half-rotted trunk, but they cling to life. I have come to regard them as I would an old friend. I considered pruning them once, but they seem to do quite well without any intervention on my part beyond an occasional watering. Birds, squirrels, even a rare deer find food and shelter near or in my trees.

Those two old apple trees, growing some 30 feet apart, were likely planted by a farm family back when most families still lived on farms. Such trees added much to the modest economy back then, providing cider, vinegar, apple butter, applesauce, pie (and many another apple treats), as well as apples to be stored down cellar against the cold winter days.

Besides the apples they produce, I have a further reason to cherish my two antique trees. Every spring they put forth bouquets of pink-tinged white blossoms, dearly loved by my bees. Loved by me, also, for few sights are more magnificent on a warm spring day.

Having those two old apple trees nearby adds much to my beekeeping hours. Their beautiful blossoms supply, at a critical time, some much-needed pollen, and perhaps a bit of nectar to boot. After blossom full, the apples begin to form. Tiny at first, they give little hint of their later appeal. As spring turns to summer and summer ripens to autumn, the apples on my two old trees ripen also. Those on the westermost tree ripen first, plumping out almost magically as summer wanes. Their green skin turns a warm yellow, suddenly red stripes appear and they are ready to eat with a taste that's sweet and fine and full of summer.

I have it from an old-timer of the human variety that these red-streaked apples are Gravensteins, originating in Germany. My apple book tells me this is a variety that once was widely grown for its excellence as both an eating and a cooking apple. But Gravensteins are not good keepers and so fell into disrepute as commercial orchardists began shipping to distant markets. Nonetheless, I've made a few converts to the delights of antique apples with the Gravensteins I've given to friends. They usually comment on how much better these apples taste than the typical supermarket fare.

The apples on my other old tree ripen later, along in October. By then I am doing those last few beekeeping jobs of the season: reducing hive entrances, repairing a few lids, perhaps straightening a hive. Whatever the task, I make time to pick some apples. This later-ripening variety turns from green to light yellow and the skin takes on a waxy feel. Perhaps they are Rhode Island Greenings, another old variety once widely known and planted. It's hard to tell for certain just from the description in a book. At any rate, these apples are great to eat out of hand and make a dynamite apple pie. Maybe someday a modern Johnny Appleseed will happen along who can tell me for certain what variety they are.

Luckily, many of the old apple varieties are again available from several mail-order nurseries which specialize in their propagation. If you are a beekeeper and an apple lover (and the two seem to go together), you could hardly do better than to set out a variety or two of the old apple varieties. You might want to consider semi-dwarf size trees if you are short on space. They are productive bearers. You'd best plant two or more different varieties, unless there are other apple trees close by, since most apples require cross-pollination.

Soon your trees will blossom every spring, your bees will faithfully pollinate the blossoms (gathering pollen in the process), and fall should find you picking some of the best-tasting apples this side of apple heaven. It all makes for one of those win-win situations. Your bees win and so do you. Call it, if you will, the honey bee-apple tree equation.