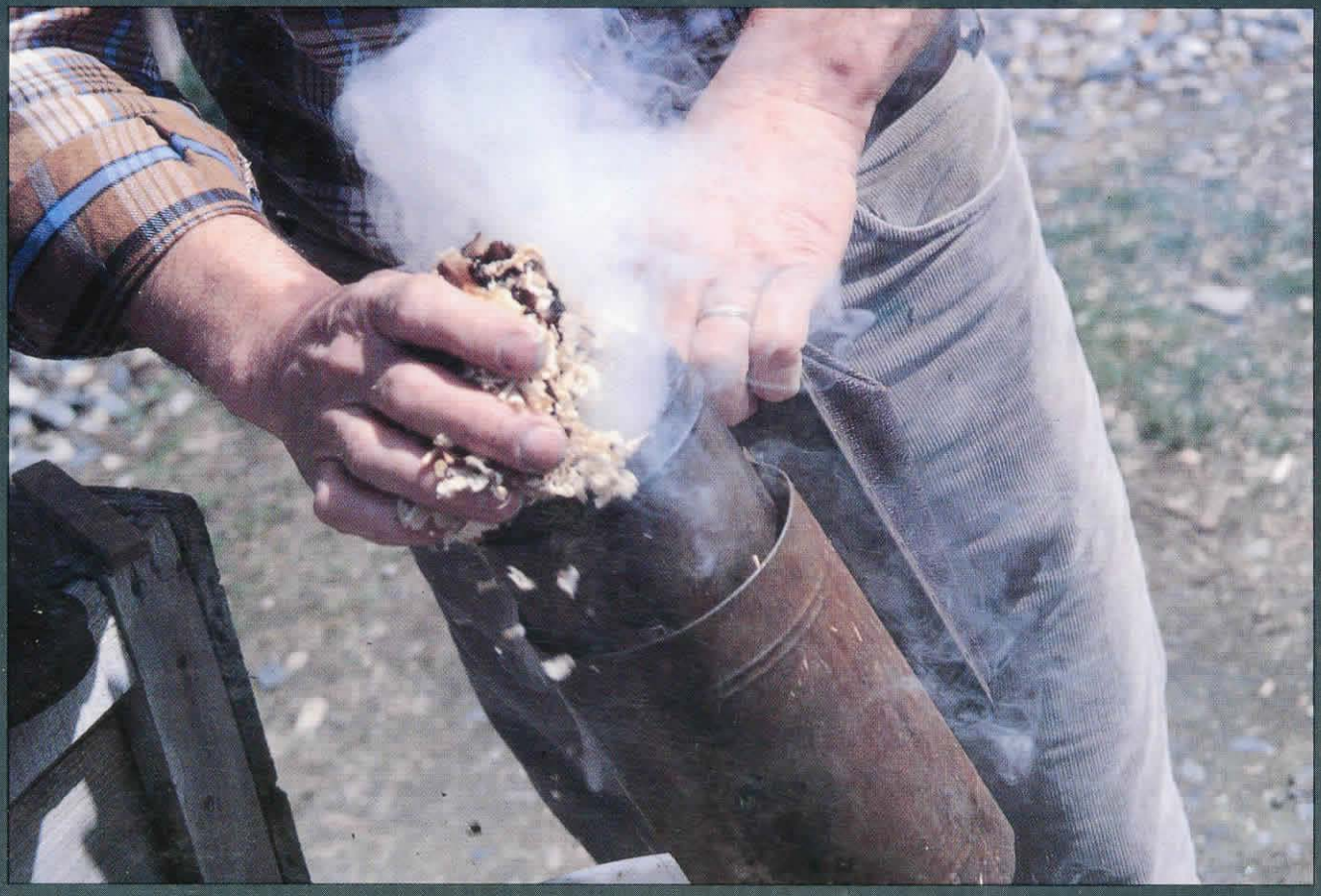
Bee Culture

MARCH 1994



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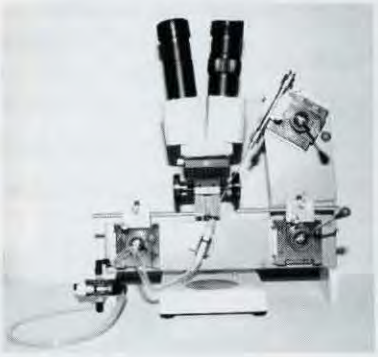

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VOL 122 ○ NO3

ch '94

FEATURES

Stier photo

Tracheal Mite Research

We know some things about tracheal mites, but not very much, really. Some thoughts on what we should be doing.
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The second part on the horizontal 2-queen system to manage bees in the upper mid-west. Don't miss this one.
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Smokers are probably the most commonly used tool in beekeeping. But until you become familiar with yours, it can be a *very* unpredictable ally.
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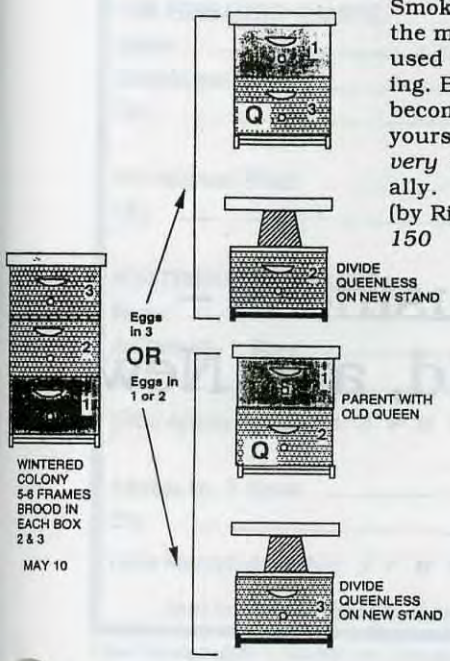

Cover

There are several principles that apply, no matter what kind of smoker you use. And, with the right care yours should last a long, long time.
photo by D. Bonney

Buying Queens

Choose the business you buy your queens from as carefully as you choose your queens. Here's what several prominent queen producers suggest.
(by Walter Clark)
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Van Der Lee's bees had survived alone in the British Columbia wilderness for over 10 years. Now, his legacy could finally be harvested.
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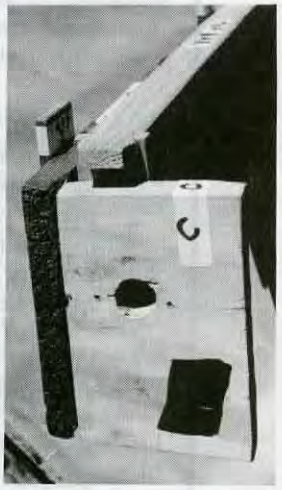

INNER·COVER

It doesn't happen often, but it happens often enough that you need to know it can.

An association out west recently discovered their treasury was missing. Thousands of dollars collected from dues and auctions and registration fees and contributions gone. I don't have all the particulars, and maybe nobody ever will, but the story goes something like this.

The association chose their treasurer several years ago because of a willingness to do the job, apparent ability to carry out the tasks required and a pleasant and pleasing personality.

Because of many events, significant sums of money were put under this persons charge and the kitty grew to several tens of thousands of dollars. For a beekeeping association we're talking big bucks.

Over the years money came in and went out in what seemed an orderly manner and nothing appeared amiss. An audit was called for, a couple of times in fact, but never gotten around to for one reason or another.

I'm not sure what happened next, but somehow the problem was discovered, and then, as the saying goes, the frass hit the fan.

Your organization probably doesn't have tens of thousands of dollars in its treasury. I know mine doesn't. But the lesson here isn't 'Don't trust your treasurer', but rather 'Run your group like a business'. Regular audits keep everybody informed of what's going on. Annual budgets (yes, you should have a budget) help plan for programs, newsletters, fairs and the like, and 'The Business' of running your group stays on the up and up – everybody knows what's going on. Expensive surprises are never good news.

•

The global market of bee supplies has arrived on U.S. shores, and life will (probably) never be the same. We have for years and years pretty much produced everything we need – partly because we pioneered the development and manufacturing techniques for most everything used in this country, and partly because off-shore suppliers haven't made serious inroads in the export (import?) market – yet.

But now, meet Bohumir Horr, the fellow who plans to change all that. Mr. Horr, who says 'Bob' is easier to remember than Bohumir (pronounced BOW-WHO-MEER) is from Czechoslovakia where, before Communist rule ended, he worked as an Agricultural Journalist at a radio station. He's been keeping bees since he was 12, but because of the type of government he lived under, being in 'business' wasn't possible. His position in journalism did give him good contacts throughout much of Europe however, and when the government changed he was in a pretty good position to start a business.

He started by exporting honey, bee products and 'technology' to other European countries, based at least somewhat on the barter system. He had traveled to the U.S. several times before, and finally moved here in 1990. Once here he sold his honey company and began an import/export business named 'APICOM', for Api (bee), and COM (Company).

He now deals with about 25 companies in Eastern Europe and 15 or so in Western Europe. He is already dealing with several companies here is the U.S. in both beekeeping supplies and other agricultural products.

His strengths are he knows how

Continued on Page 172

Business – Old, and New

Reader Assistance

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NEXT MONTH

Next month, April. No matter where you live April is certainly more like spring than winter, and for some more like summer. No matter the weather, April brings some seasonal activities to bear – and *Bee Culture* is right on time.

The latest research on controlling tracheal mites is showing that *when used correctly*, grease patties can reduce mite populations *in your colonies*. Researchers from Ohio, Maryland and Canada have all found positive results – and April (or even March) is the best time to start treating. Next month check out the very latest in Tracheal Mite Control.

Pollination is still gaining popularity, and more people are getting involved. Next month we've got two pieces on being a better pollinator. The first, from Mark Winston looks at improving the efficiency of the job; the second by the Pennsylvania Weavers talks about planning ahead for summer contracts. More on pollination right here next month.

Finding locations for your bees seems to be getting harder, and next month we've got a few good ideas on how to locate a site that's good for bees, good for you and good for the land owner. This task is only going to get harder, so take some lessons now.

And, does your group need a good idea for a fund raiser? How about a plant sale? Larry Goltz shows how his group made it work, and you can too. Tune in for a honey plant sale how-to, Next Month.

And finally, April is the Annual Directory – Who's Who in Beekeeping. A 12-page removable section, listng everybody who's anybody in Apiculture.

Next Month – Pollination, mite control, apiary sites, plant sales and the 1994 Who's Who. All in *Bee Culture*, all in April.

MAILBOX

■ Poor Service Costs Money, Customers

I very much enjoyed the article on Races of Bees in the January '94 issue of *Bee Culture*. I plan on expanding my operation and look forward to success again this year. I started with only two colonies and will continue to expand, going to six or eight this year. There is a situation that I wish to share that isn't so pleasant though, and it affects all of us.

Recently I ordered and received some beekeeping supplies. Unfortunately I received more than I had bargained for. The shipping invoice stated the correct quantity of Fumidil-B ordered but, for some unknown reason, I received eight times as much as I ordered. I specifically ordered frames with wedge top bars but received those with groove top bars. Of course the foundation I received only works with wedge top bars. At the time I ordered this material, I had the employee read back to me what I had ordered. Everything seemed correct. I kept my notes for reference.

I called the company and spoke to the manager who was willing to correct the mistakes and adjust the billing. Since most of this order had been on "back order" I decided to simplify things for myself and keep the woodenware and send back the foundation. It would save time and unnecessary expense for the company and I would change to permadent foundation. Of course there is more profit in this for the company. I am still in the "try and see" mode of operation. Returning things is such a frustrating thing for me and I usually try to accommodate when I can, up to a point.

This brings me to the point. Have you paid much attention to what shipping charges cost? Frustrating isn't it? Can you imagine the time and money correcting mistakes. It cuts into profits and who do you suppose pays for it?

I am curious how prevalent this problem is in the industry. Given the attention to foreign competition and other issues affecting business today I would hope that this is a minor or isolated incident – but I don't think so. Perhaps if business slows down for this company it will be due to increasing local competition, or economic downturn, or the mites, or , but certainly not discouragement on the part of consumers, or indifference and incompetence on the part of any business. It seems to me that simply checking one's own work would help some, or is the demand so great that one can write off the loss of a few customers?

For those beekeeping suppliers that read this I hope you give some thought as to what might be happening under your nose and to where you and your loyal customers are going.

Tom Bertrand
Ogdensburg, NY

■ Race Differences

Congratulations on the article Races (*Bee Culture*, Jan. 1994).

The excellent color photos reproduced well and added a note of distinction to the issue.

Although my experiences with colonies of some of the races you describe were somewhat in variance with yours I think that in general your descriptions were in accordance with what the average hobby beekeeper can expect. Races of bees observed beyond the time frame of one season, or, derived from stock of uncertain purity, or, exposed to highly stressful environmental conditions may be surprisingly at odds with the characteristics you have described. My carniolans were hardly "very calm" They boiled off the combs and fell to the ground in clusters during manipulation. Perhaps I had acquired a rogue "old world" strain. This was several years ago before current breeding improvements were in general use. My caucasion colonies were decidedly docile but were not disposed to use excessive propolis. They brooded up quite rapidly in the spring thereby contradicting the commonly accepted characteristic of slow spring buildup.

I have not experimented with different races in northern California. Possibly some interesting variations would occur due to our locally highly variable environmental conditions.

Lack of attention to requeening colonies of racially distinct bees can lead to relatively immediate blurring of distinctive characteristics, especially where beeyards are not isolated. I am sure you will note this phenomenon at least to some degree should some of the queens be superceded. Most organisms subsisting in their natural element tend to revert to a state of genetic equilibrium within the dictates of their environment; otherwise speciation would not have happened. Races, strains, cross-breeds and varieties, for example, are a few of the terms somewhat synonymous with species. Hobby beekeepers should bear in mind that colonies of bees subject to the process of supercedure may radically alter the characteristics they have hopefully introduced in your apiary, be it one colony or dozens.

Larry Goltz
Redding, CA

(Larry Goltz is a former Editor of *Bee Culture*.)

Continued on Next Page

MAILBOX

■ Mason Bees . . .

In the January issue on page 9 you show a "condominium for bees." This is meant for the Orchard Mason Bee. These bees are the first to hatch in spring and help fertilize early fruit trees.

Additional information is found in the book *The Orchard Mason Bee* by Brian H. Griffin, Published 1993 by Knox Cellars Publishing, Bellingham, WA. Price $9.95.

John McGee

■ . . . or leafcutters.

The letter and photo from John McKelvey, Jr. in your January issue relating to a "a condominium for bees" shows a hive or box that very much resembles the structures being used experimentally in Maine, to house leafcutter bees (*Osmia atriventris*). The leafcutters are being evaluated as an alternative pollinator of blueberries.

I can well imagine that the boxes or hives are being marketed commercially for use in and around home gardens.

The leafcutter bees use the individual cavities as pictured in the photograph to rear brood and store food.

Bob Grady
Raleigh, NC

■ Reinfestation?

It was the middle of January before I got to read the 1993 December issue of *Bee Culture* magazine. The feature written by Steve Taber on 'Dead Colonies Tell Lots of Tales' answered many questions I've had since my sad experience last September.

I'm a hobby beekeeper. I had four colonies of bees. In August I took 430 pounds of honey off the four colonies. Forty days later I went back to treat the colonies for winter as I have for the last seven years. In two of the colonies the bees were all gone; not even a bee carcass left. The yellow jackets were doing a good job of robbing the winter supply of honey I had left. The other two colonies were very weak and the yellow jackets were doing a good job of robbing them. I talked with my bee supplier and he suggested treating the colonies for *Varroa* mites as there wasn't any signs of AFB. So I put Apistan strips in each colony hoping to save the colonies. Also I placed a white sheet of paper sprayed with Pam on the bottom board. The next day I found some *Varroa* mites on the sheet of paper. It was too late as I lost all my bees.

What surprised me the most was that when mites attack bees the bees are irritated to the point they abandon the colony: therefore no bee carcass left. *Now if I buy more bees can I use the same brood chamber, supers and frames without having trouble?*

Sure would appreciate any advise you can give me.

Rex Pryor
Three Rivers, MI

MAILBOX

Editor's Note: Once the bees are gone, and presuming there was no AFB present, your combs, supers and frames are perfectly O.K. to use again without fear of reinfestation. This time, though, watch carefully for *Varroa!*

■ Plastic - Not Good

I would like to respond to your complaint in the January issue of *Bee Culture* on plastic inner hive covers. A couple of years ago I also tried three of the plastic inner covers and the results were not very encouraging. (The masonite inner cover was not much better.)

I have my bees in western CO at about 7,000 ft. elevation. The temperature is usually cool at night during the summer and cold in early spring and fall and very cold in the winter months. My experience with plastic and masonite inner covers was a lot of water in the hives from condensation dripping from the inner covers. This condition was present even in the summer. Also these hives did not produce as good as the hives with all wood inner covers. This could have been the colonies, but when I changed to a good soft pine inner cover I have not experienced the condensation problem. (The water seems to evaporate quickly from the wood.) And the hives did produce much better.

I tried wintering three hives in a root cellar last year. One hive had a masonite inner cover and the other two all wood inner covers. When I checked the hives in early spring the masonite covered hive was wet to the bottom boards. The other two hives were dry. Also on these three hives I had installed insulation board which I thought would absorb the moisture but I believe the masonite prevented this and it just dripped into the hive.

There might not be any studies on the plastic inner covers but I know from experience that I will use only soft pine inner covers on my hives.

Gary Frey
Fernley, NV

■ More On Plastic

I am writing about the plastic or wood inner covers, written by Larry Miller, Wagontown, PA on your mailbox page in your January 1994 edition.

I have about 60 hives of bees. Most of them have cedar Migratory lids, but I do have some with wooden Telescoping lids. From my experiences with wooden or plastic inner covers, I have found that they will either condense or form a heavy frost on them. However, Migratory lids or *any* kind of lid above the bees will condense from the heat of the bees.

I own six plastic inner covers, and four plastic lids. I own also about 20 wooden inner covers. Most of the time, I don't use them except for feeding with two-gallon buckets during the winter season. I think that is the only use they have. Why spend extra money on them unless they're used for feeding purposes?

My bees winter well without inner covers. Migratory covers are cheaper, but in colder weather, you should use cedar wood. Pine wood rots too quickly. In my opinion, those bees

Continued on Next Page

MAILBOX

would have died regardless of what kind of inner cover you used. With the way prices are these days, I had to turn to Migratory lids. I can buy about 10 Migratory lids for the price of five telescoping covers. That doesn't include the price of the inner covers that they think you need to go with them.

Try wintering some of your hives in Pennsylvania with the cedar Migratory lids without the use of any kind of inner cover. I drill a hole in the top super so that the bees can get air in case the bottom hole gets blocked off by snow or ice.

George M. Christensen
Albion, IL

■ Plastic - Maybe

In regard to Mr. Miller's remarks about the plastic inner covers in the January edition, I have not had any experience with the last one he got. But I got some plastic inner covers from a major supplier. My trouble was they warped so bad from the heat, and they seemed to draw those big black ants. I have seen them just about full on top with them. But the hives in the same yard with wooden inner covers would not have an ant. I could not see as they caused any more moisture in the hive.

Thomas George
Shoals, IN

■ China Blues

I was (I hope) more amused than troubled to see the notice and appeal for money from the American Beekeeping Federation in the Dec. issue.

Astonished too, just when the Peoples Republic of China reportedly is at the brink of placing a multi-billion dollar order with Boeing to purchase a whole new air transportation system for that huge emerging country. The aerospace workers of Seattle will have a fit.

What other American jobs, I wonder, are to be put at risk to satisfy the narrow needs of the ABF and its resistance to free enterprise and global trade?

I thought you and a few friends might chase the January blahs away by photo copying a few more of these ads and edit them to be from

The French National Film Producers Assn re: Jurassic park.

The Haitian Tontons Macontes re: the U.S. Military.

The Uzbekistan Shaman's Fellowship re: Jimmy Swaggart, etc.

David Hampton
Toronto, Ont. Canada

■ Menthol

I've been a beekeeper for only a short time and am still looking for the answers to a lot of questions. Your magazine and it's articles have answered a lot of those questions for me.

After reading MAILBOX in a recent issue of *Bee Culture* several questions came to mind concerning menthol.

I have heard menthol referred to as either crystals, pellets, or buds. Are there in fact three different types of menthol products or are they the

MAILBOX

same product with the different terms used to describe them. If they are different are there any advantages to one over the other and are they used in the same manner?

Thanks for all your help and a fantastic magazine.

Ed Mabesoone
Brooksville, FL

Editor's Note: These are all the same product in different forms. The advantages, if any, are in use only. Crystals tend to fall through mesh bags, pellets don't.

■ Hand Care Question

During our recent cold dry winter I was given a very pleasant small hand care 'cake' which quite obviously was at least partially comprised of beeswax. Can you or anyone else out there provide us with any insight as to the other items (and the ratios of each) which might be in this item and how one would go about blending them (any tricks or special requirements?). We tried plain beeswax but it didn't have the same 'oilness' which is then absorbed into the skin.

Thanks for your help and I hope you can provide us some answer without having to wait to find it in *Bee Culture*. (Just for the record – for no particular reason I always like 'Gleanings' as part of the title.)

Paul B. Birnholz
Westford, VT

Editor's Note: Several formulas for hand creams are available in the book, *Super Formulas* by Elaine White, Valley Hills Press, 1864-B Ridgeland Drive, Starkville, MS 39759. This book contains many other bee product formulas, too.

■ Pollination Correction

Thank you for your review of our delayed pollination work in the February issue of *Bee Culture*. In your comment " you can wait up to several *weeks* before bees are allowed into do their job without loss of quantity or quality of delay of harvest." Weeks should read days. Our findings so far indicate that cantaloupe pollination in the Lower Rio Grande Valley can be delayed by at least six days without affecting the crop. In some varieties, a 12-day delay may not have an adverse effect, but more research is needed to describe what effects longer delays may have on different varieties. You may be right that fairly long delays may not be harmful for some cucurbits, but we don't have the evidence to support it.

Frank A. Eischen
Weslaco, TX

Editor's Note: Yes, my notes say days, not weeks, too. Sorry for the confusion.

Credit Due

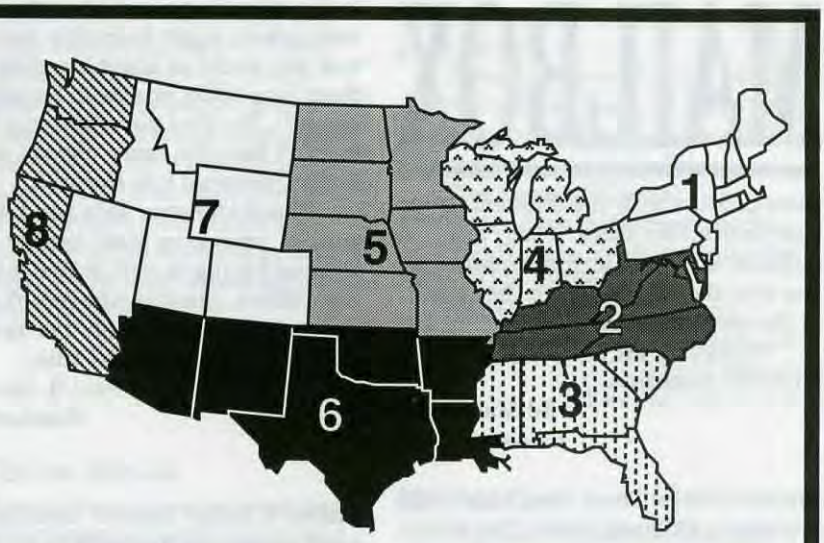
The Cover photo for the January issue was taken by Lorraine Beaman, from the USDA Bee Lab in Baton Rouge, LA.

MARCH Honey Report

March 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	49.10	42.69	44.70	43.95	47.45	42.25	48.50	39.55	31.20-58.00	44.90	42.83	43.95
60 # Amber	45.30	42.65	42.60	39.25	44.40	38.70	41.00	35.45	25.80-60.00	42.00	41.05	40.84
55 gal. Light	.682	.558	.550	.550	.540	.570	.525	.603	.50-.90	.595	.560	.612
55 gal. Amber	.610	.500	.548	.490	.508	.525	.475	.540	.43-.78	.543	.511	.562
Wholesale – Case Lots												
1/2 # 24's	21.79	26.03	25.82	20.13	29.40	19.40	22.53	19.60	16.50-38.40	22.55	23.95	20.26
1 # 24's	32.05	30.76	29.83	29.99	30.45	31.60	26.68	28.60	23.60-37.90	30.43	31.21	30.96
2 # 12's	30.11	28.68	28.57	27.40	25.51	31.00	32.38	30.95	24.00-35.30	29.99	29.13	27.80
12 oz. Bears 24's	28.99	27.56	29.45	25.43	28.83	26.58	29.35	24.10	22.80-37.90	27.65	27.91	26.68
5 # 6's	31.58	29.98	28.41	34.30	30.15	26.50	27.75	29.15	25.80-38.00	30.32	28.41	29.42
Retail Honey Prices												
1/2 #	1.27	1.70	1.04	1.14	1.17	1.15	1.19	1.15	.83-3.25	1.27	1.12	1.10
12 oz. Plastic	1.62	1.71	1.77	1.44	1.55	1.49	1.55	1.49	1.24-2.25	1.60	1.60	1.57
1 #	1.78	1.94	1.72	1.54	1.76	1.68	1.92	1.81	1.43-2.25	1.80	1.83	1.79
2 #	3.31	3.21	3.10	2.89	2.73	3.05	3.68	3.06	2.39-4.40	3.12	3.18	4.41
3 #	5.49	4.58	4.44	4.42	3.62	3.99	4.83	4.43	3.24-5.55	4.44	4.16	4.25
4 #	5.98	5.92	5.82	5.51	4.93	5.05	5.23	5.98	4.86-7.40	5.51	5.29	5.43
5 #	7.66	6.88	5.95	5.95	6.18	5.69	6.28	6.18	5.40-8.95	6.61	6.58	6.51
1 # Cream	2.45	2.64	2.43	2.43	2.05	2.84	2.20	1.98	1.49-3.50	2.30	2.26	2.27
1 # Comb	3.20	3.08	3.38	3.11	3.59	4.48	3.48	3.55	2.29-5.00	3.46	3.33	3.07
Round Plastic	2.70	2.62	3.36	3.51	2.78	3.88	4.00	2.79	2.00-5.05	3.03	2.81	2.52
Wax (Light)	2.76	1.27	1.63	1.59	1.39	2.05	1.90	1.37	1.20-3.80	1.85	1.47	1.63
Wax (Dark)	2.04	1.17	1.25	1.33	1.27	1.58	1.55	1.17	1.00-2.75	1.45	1.25	1.28
Poll. Fee/Col.	38.33	21.00	32.50	35.00	36.55	25.00	30.00	31.25	20.00-55.00	32.63	28.85	30.39

MARKET SHARE

The ITC ruling acted on by the President (if he did) won't have much affect, at least yet, if ever. Some packers have stock piled enough for all season, others will find it to fill contracts. Meanwhile, small packers either can't find honey, or can't find a market. This is an industry consuming itself, slowly in the winds of spring. Will summer be better? If you sell retail, stress it's a local product. It's all that's between you and the imports. Actively create your own image.

Region 1

Sales steady to seasonally strong. Cold weather has helped sales, but kept bees inside. Little or no flight through February. Tough to check colonies but losses seem light. Feeding will be needed for many.

Region 2

Sales steady to increasing and retail prices going up slightly. Colony conditions appear average to good with normal losses, so far. Winter losses may add up fast though. Flight days reduced due to weather extremes this year. Mites still present but not causing serious losses this early.

Region 3

Sales strong and prices, at retail, strong. Colonies in the north seem O.K. but cold weather has slowed development. South doing well, colonies strong but prices at wholesale weak.

Region 4

Sales strong but weather the key. Cold, snow and more cold. Record low temperatures and snow have kept bees inside too long. Losses difficult to determine but preliminary reports seem positive. Watch for feeding, especially weak colonies. Early reports of significant loss of fruit trees could hamper pollination.

Region 5

Sales holding well, demand strong and even wholesale prices not as low as other regions. Winter tough this year, bees confined and feeding needs to be watched. Losses expected to be high, especially in areas with deep snow.

Region 6

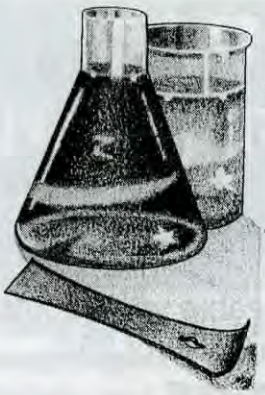
Sales only steady, prices not moving much either way, but wholesale sales slow, slow, slow. Dark honey mostly still sitting in warehouses. Colony conditions fair to strong, but mites are still prevalent and will show up this month. Watch out.

Region 7

Sales strong, demand strong, situation normal. But colonies in only average condition. Erratic winter has brought colonies along, so check for feeding ASAP.

Region 8

Wet weather holds the key to the rest of the year now. Pollination contracts holding their collective breath. Moving colonies could be tough, but getting to and treating tough, too. High winter losses, blamed on T. mites reported. Feeding in north, treating everywhere.



RESEARCH REVIEW

roger morse cornell university ithaca ny

"Among other things this month, it's obvious we need to look more at honey removal."

I was at first amused, and then as one interestred in research, embarrassed when I saw the cover picture on the June issue of the Australasian (Australian) Beekeeper. A beekeeper is shown blowing bees from a super and over the picture are the words "Escape Boards or Blowers?"

The truth is that beekeepers around the world are in need of a more efficient method of removing honey supers from colonies. Bee escapes were invented in 1891 and bee blowers have been around for nearly 50 years. I have never heard any beekeeper say that either method was great.

Smoking and brushing bees off combs to steal honey has been done by beekeepers for thousands of years. It is still an effective method if one has only a few colonies from which to remove honey. There are also repellents to drive bees off combs, several of which are more or less effective. All of these methods has its advocates. Certainly there must be a better system! Here is an example of a research area where some serious thought is needed.

Sex Attractants

Demonstrating how the sex attractant in honey bees works is easily done on a warm, sunny afternoon. All one needs is a fish pole with a light weight line, a helium filled balloon and a live or recently killed queen. When the queen is tied six to ten feet under the balloon, and elevated 20 to 50 feet in a drone congregation area, one to one hundred drones may come flocking her.

Despite the fact that the sex attractant and drone congregation areas were discovered over 30 years ago there are only a few good papers on the subject. These are reviewed in the paper below. In some of the more recent studies a "trailer mounted x-band radar" was used to follow and study drone flight. In one 3.5 by 1.5 kilometer (2.1 by 0.9 mile) area in Arizona there were 29 drone congregation areas. These were connected by 13 kilometers (7.8 miles) of flyways. The places where drones congregate were not uniformly distributed over the area. In two locations, the drones areas were "joined"

It is not possible at present to follow queen flight by radar though in one such attempt there appeared to be a cluster of drones following a queen. Hopefully, one of the small radio transmitters being developed may someday be attached to a queen that will allow researchers to follow her while she is in flight.

•

The common greater wax moth will eat any unprotected honey comb and is a serious hive pest. The sex pheromone (attractant) in these moths has been identified and is secreted from glands in the wings of the males. However, in laboratory tests, live males are far more effective in attracting females than is the synthetic sex attractant because the synthetic materials break down rapidly. Living males supply a continuous supply of the sex attractant, something that is not possible with the synthetic material.

Researchers in Turkey have found some more stable, closely related compounds that are attractive to the female moths. The research is still in an early stage. However, we are aware that several other moth pests are being controlled using sex attractants as baits. Hopefully, compounds closely related to the greater wax moth sex attractant may someday be used as control agents.

Crowding Bees

There is a new study on the effect of hive volume on honey production and colony growth. Experiments undertaken in Louisiana showed that crowding bees in winter caused them to consume less honey and to produce less brood.

In the spring, summer and fall, again in Louisiana, crowded bees produced more honey. During the warmer parts of the year they also produced less brood "but the difference was less marked than in winter."

How do we reconcile the conclusions from these experiments with others that show that colonies with more space produce more honey? In talking to Dr. Harbo, the answer may lie in the type of honey flow. In a strong honey flow there must be space to store the incoming nectar and if there is not enough space the bees in a crowded colony will stop foraging. However, in a weak or moderate nectar flow, the crowded colony will do better.

Social Control

A queen honey bee dominates the workers in her colony through the release of chemical substances (pheromones) from glands in her body. What has not been so clear is that there are at least three glandular systems, not one, working at the same time. Much has been written about the queen's mandibular glands and the role they play. We have understood their im-

portance since the late 1950s. There have been a number of papers on the chemistry of the substances produced by the mandibular glands but little is known about the others.

In addition to the secretions produced from the mandibular glands, a portion the of queen pheromone is also produced from the abdominal tergite glands and the tarsal glands on the feet. However, the chemical composition of the materials produced by these last two types of glands has not been studied.

In experimental hives, when the substances from the mandibular gland's of queens were fed to a queenless colony, the number of queen cells produced was reduced over the number produced in colonies without the substance. However, queen cell production was not totally inhibited. This, it was found, was true because the mandibular gland pheromones, by themselves, are not sufficient to do the task.

Resistance To *Varroa*

More papers are appearing concerning how European honey bees resist *Varroa* mites. These point out that grooming varies greatly in honey bees and that some have a greater ability to groom the mites off their bodies than others. These mites are then mutilated and carried outside of the hive where they are discarded.

What is new in one of these papers is that there is a seasonal effect, at least in the colonies studied in these tests. Only 10% of the mites were mutilated in March but 64% were damaged in June. These tests were done in Germany. It will be important to look at our resistant stock in this regard.

References:

Loper, G. M. *What do we really know about drone flight behavior?* Bee World 73: 198-203. 1992.

Turker, L., I. Togan, S. Ergezen & M. Ozer *Novel attractants of Galleria mellonella L.* Apidologie 24: 425-30. 1993.

Harbo, J. *Worker-bee crowding affects brood production, honey production, and longevity of honey bees.* Journal of Economic Entomology 86: 1672-78. 1993.

Engles, W., A. Adler, P. Rosenkranz, G. Lubke & W. Francke. *Ontogenetic patterns in the volatiles of queen mandibular glands & dose-dependent inhibition of emergency queen rearing.* Apidologie 24: 506-7. 1993.

Buchler, R. *Rate of damaged mites in natural mite fall with regard to seasonal effects & the infestation development.* Apidologie 24: 492-93. 1993.

? DO YOU KNOW ?

Honey Characteristics

clarence collison

The National Honey Board has recently developed an official definition of honey. This was no small accomplishment since honey is a natural product that is highly variable in composition and characteristics, depending on the mixture of floral sources. "Honey is the nectar and sweet deposits from plants as gathered, modified and stored in the honey comb of honey bees." In addition there is information concerned with chemical composition, types of honey, designation of honey sources, forms of honey, honey products, grading and methods of analysis.

How familiar are you with the characteristics of honey? Please take a few minutes and answer the following questions to determine how well you understand this important topic.

The first thirteen 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. ____ Honey and honeydew are similar in chemical composition.

2. ____ In order to sample bulk containers of honey for fermentation, it is necessary to remove a sample from the bottom of the container.

3. ____ Types of honey that do not crystalize over long periods of time are high in moisture.

4. ____ Pure orange honey produced in Florida, Arizona and California will be similar in chemical composition.

5. ____ The moisture content of honey will influence keeping quality, granulation and density (weight).

6. ____ The most common acid in honey is gluconic.

7. ____ Most enzymes found in honey are present in the nectar supply.

8. ____ Honey darkens as it is heated or stored.

9. ____ A Pfund grader is used to measure the pH of honey.

10. ____ Dark honeys normally have a more pronounced flavor and are higher in minerals than lighter honeys.

11. ____ The viscosity of honey is related to the moisture level, temperature and protein content.

12. ____ Honey with less than 17.1% moisture is safe from fermentation regardless of the yeast count.

13. ____ Honey is a rich source of vitamins.

The three principle sugars found in honey are listed below. Please select the correct answer for each question that follows: A) Glucose (Dextrose) B) Sucrose C) Fructose (Levulose)(Each question is worth one point)

14. ____ Most predominant sugar normally found in honey.
15. ____ Sugar found in honey that is normally present in the smallest quantity.
16. ____ Most complex of the three sugars.
17. ____ Sugar that crystallizes in honey.
18. ____ Sugar that provides the extreme sweetness of honey.

Multiple Choice Questions (1 point each).

19. ____ Gas produced during honey fermentation.
    A. Hydrogen
    B. Carbon Dioxide
    C. Helium
    D. Oxygen
    E. Nitrogen

20. ____ Most common microorganisms found in honey.
    A. *Clostridium* Spores
    B. Viruses
    C. Bacterial Cells
    D. *Bacilius* Spores
    E. Yeasts

21. ____ The average pH of honey is:
    A. 7.0
    B. 3.9
    C. 1.2
    D. 8.3
    E. 5.4

22. ____ More than ____% of the solids of honey are carbohydrates, primarily sugars.
    A. 91
    B. 99
    C. 95
    D. 83
    E. 87

23. ____ Honey in the comb is marketed in three different forms; name them. (3 points).

Answers on Page 176

TRACHEAL MITE RESEARCH

The Next Generation

mark winston

Remember the honey bee tracheal mite? Ten years ago this pest was first found in the United States, and it clearly had impact, both on honey bees and on the politics and economics of how we manage them. Study after study showed heavy winter losses due to tracheal mites, which led to intensive and expensive colony testing for the presence of these parasites, some quarantines and restrictions on bee movement, and severe reductions to the American package bee and queen industries due to limitations on bee imports into Canada from the U.S. Eventually, treatments such as menthol, formic acid (Canada only), and various vegetable oil patties were developed, and *Varroa* and Africanized bees appeared. Today, tracheal mites have been relegated to relatively minor status, perhaps not in their impact but certainly in the attention that beekeepers and researchers pay to this pest.

The history of tracheal mites in North America from a research perspective is odd because, although we can now control the mite chemically, we have very little real understanding of this pest's biology and impact. No one has yet discovered how tracheal mites effect bees, or why they appear to cause serious economic damage in some colonies and locations but not in others. We have chemicals that we apply for treatment, yet we don't know how or why they work. Also, there has been considerable research into heritable resistance of honey bees to tracheal mites, but the mechanism of such resistance is unknown, and the economic impact of so-called resistant stock has yet to be proven.

Perhaps the most serious gap in our understanding of tracheal mites is that we simply do not know what they do to an individual bee. One theory is an obvious physical one; you would think that a bee carrying a heavy mite infestation in its breathing tubes would have trouble breathing, leading to poor flight performance and a short life. However, this is not the case; no differences have been found between infested and uninfested bees in performance characteristics such as the number and timing of foraging trips, nectar load sizes, and length of life. Another theory is that tracheal mites themselves are fairly benign, but they transmit some bacterial or viral disease which weakens and kills bees. This is an area of active research today, but a clear connection between tracheal mites and bee diseases has yet to be established.

Our failure to discover the mode of tracheal mite damage to colonies is particularly remarkable since we have developed numerous control methods that seem to work. This is unusual in pest control. Generally, management tools are developed that target particular aspects of a pest's behavior or physiology. For tracheal mites, we dump aromatic chemicals such as menthol, caustic compounds like formic acid, and seemingly benign substances like vegetable oils into colonies for control, and they work by reducing the number and impact of mites, at least when treatments are properly applied. Yet, we don't have the foggiest idea as to why any of these substances are effective. We have bypassed the typical research protocols in pest management, which almost always begin by first understanding a pest's biology and mode of action, followed by development of a targeted control measure that effects the pest without hurting the host animal or plant. It would be nice to say that our research community has been extraordinarily astute in determining this pest's weak points and developing control measures, but in fact I think we have been exceptionally lucky to find control methods in the absence of real knowledge about this pest's mode of action.

The real impact of tracheal mites is another area of some confusion in the beekeeping community. Most studies, particularly in northern regions of North America, have shown high levels of winter loss and poor colony performance in tracheal mite-infested colonies. Indeed, infestation rates of 10% or above are considered serious danger signs, and virtually all extension information throughout North America recommends annual or more frequent treatments when mites are present. Yet, we continue to hear reports from beekeepers who claim that, although they have tra-

Continued on Next Page

"I have always been somewhat critical of our approach to finding and breeding tracheal mite-resistant stock, because I think we have been going about these programs in the wrong way. The first problem with resistance studies is that we have been focussing on finding 'resistance,' but we pay little or no attention to what characteristics of bees might impart resistance, or to what that resistance might mean at economic levels."

MITE ... Cont. From Pg. 141

cheal mites, they are not an economic problem, and most authorities in Europe claim that these mites are not a significant pest. Indeed, European recommendations for bee management generally do not include any measures for tracheal mite control.

One explanation for these divergent reports of tracheal mite impact is that there is some variation in the virulence of mites from different regions. Of course, we can not make much progress in analyzing this possibility until we understand what mites do to bees, but such variation in virulence is typical of pests and diseases. The best strategy for a parasite such as the tracheal mite is not to kill its host, but rather to adapt to living within the host while inducing only a minimal amount of damage. When the host dies, so does the parasite, so it would clearly be advantageous for tracheal mites to inflict only a low level of damage on the host bees. This explanation, although purely speculation, makes sense, and deserves some attention from the research community.

The more common explanation for these varied reports of tracheal mite impact on bees is that some honey bee colonies are resistant to tracheal mites. The possibility of resistance has led to numerous selection programs designed to find and breed mite-resistant bees. These programs have been quite expensive to conduct, and frequently have involved importations of foreign bee stock under quarantine, with the assumption that there is some resistance mechanism present in European bees that can not be found here in North America.

I have always been somewhat critical of our approach to finding and breeding tracheal mite-resistant stock, because I think we have been going about these programs in the wrong way. The first problem with resistance studies is that we have been focussing on finding "resistance," but we pay little or no attention to what characteristics of bees might impart resistance, or to what that resistance might mean at economic levels.

Mark Winston received his Bachelor's degree in Cell Biology and Masters in Marine Biology, but prior to 1975 he had never been inside a hive. His first experience with bees was with the Africanized bee in French Guiana, while working on his PhD with Dr. Orley Taylor at the University of Kansas.

After graduating he spent time as a post doc at Kansas, then was a visiting professor first at Idaho State University and then Hebrew University of Jerusalem. He became an Assistant professor of Biological Sciences at Simon Fraser University in Vancouver, British Columbia in 1980. In 1988 he became full Professor.

His research program at SFU has been diverse, involving package bee production, queen overwintering, management to supress swarming, economic impact of pollination management systems and using bee pheromones.

He teaches or has taught classes in Insect Biology, Social Insects, Introduction to Beekeeping and Entomology. He has also authored or co-authored nearly 90 scientific papers, two books (*The Biology of the Honey Bee* and *Killer Bees, the Africanized Honey Bee in The Americas*), and a half-dozen chapters in other books.

He is a member of many scientific and practical beekeeping organizations and has won several awards and citations, including EAS Student Award in 1979, the EAS Hambleton Award and the WAS Outstanding Servicing Award, both in 1992.

He is married and has a nine-year-old daughter (who definitely is *not* a bee person), and a couple of cats.

Mark Winston's writing offers a unique perspective on this industry, unlike any other we are aware of. His contributions to *Bee Culture* from that perspective will cover the science, the art, the actual and the political sides of bees, beekeepers and most certainly beekeeping in the U.S., Canada and wherever else he sees fit.

Another problem with resistance research is that the standard selection protocols have not been taken to the final step of production-level studies. The procedure for determining resistance was originally developed by Norm Gary, Rob Page, and their colleagues, and involves placing groups of test bees into the same colonies or cages, and then counting the number of mites per bee from each group a week or two later. Presumably, those lines of bees with fewer mites are more "resistant." This approach is fine as a first step, but we have not yet taken it to the really important level, which is colony performance by so-called resistant stock. To date, there has not been a single thorough study comparing resistant and susceptible stock in terms of colony growth rates, honey production, and colony overwintering survival. That is, resistant bees may show fewer mites under highly controlled research conditions, but perhaps don't produce any honey when managed commercially, or die at high rates during cold northern winters.

Still another area of concern for tracheal mite resistance is that we don't know what resistance might mean in terms of chemical treatments. Can so-called resistant stock be managed without chemicals, or is *some* level of chemical control still required? If chemical treatments are required, is the resistant stock productive enough to justify its use? These are all questions that should be the "bottom line" of resistance research, but have yet to be addressed.

Finally, a particular pet peeve of mine concerns expensive and laborious importations of potentially resistant stock under complex quarantine conditions. The rationale for such importations is that European bee stock supposedly is not affected by tracheal mites, and so we should incorporate European genetic material into North American stock. I have argued against such importations for a number of reasons. First, there is North American stock that tests equal to or better than any stock that has been imported, at least using the mite load tests described above. Thus, the elaborate and time-consuming protocols involved with importations may

not be necessary, since we have stock of similar resistance levels already present in Canada and the U.S.

Second, and perhaps more important, there is no reason to believe European stock will perform well under North American conditions, even if resistant to tracheal mites. Beekeeping in Europe is very different from that in North America, with relatively little large-scale commercial beekeeping, almost no migratory beekeeping, and certainly different climatic and floral conditions. Although our North American stock originated largely from Europe, it has been intensively selected and bred for our beekeeping conditions, and likely differs substantially from the original stock in its management characteristics. I think a better selection strategy would be to focus *first* on identifying good North American beekeeping stock, *and then* examining these bees for resistance.

I also question whether research-oriented breeding programs have much chance of contributing to long-term stock availability. Selection and breeding is a long, complex, and expensive process, and perhaps best conducted by government and University researchers for those reasons. However, our research funding structure today does not encourage stock maintenance following selection, mostly for political and economic reasons. To date, in spite of many selection programs that our U.S. and Canadian governments have sponsored, there are few, if any, examples of breeding stock that has both been maintained for *long* periods and has made its way into widespread commercial use. This is not to fault the research community, or to downplay the potential of such selected stock. Rather, we always seem to put the cart before the horse in selection programs. That is, selection receives funding and research attention, but once selected stock is available there are no provisions made for long-term maintenance and distribution of such stock.

Where does this leave us with tracheal mites? We need to focus our attention more on how mites effect bees, in order to develop better management tools, including possibly resistance. However, I think our resistance studies need to focus their attention more on North American stock that has proven useful for beekeeping. Finally, resistance development will only be of academic interest unless methods of stock maintenance and distribution are developed, and we need to determine if and how this will be accomplished *before* investing more research funds into selection for mite-resistant stock.

BEES IN THE UPPER MIDWEST

Making The Minnesota Divide

marla spivak

Last month I described how and when to hive a package of bees in the upper Midwest, specifically in Minnesota. In this article I summarize the basics of Dr. Basil Furgala's "Horizontal Two-Queen" or the "Best" system for keeping bees in the cold country, and what you should be doing with your new package and your wintered colonies in May.

Minnesota is beautiful in May. Dandelions cover lawns and roadsides, and fruit trees bloom everywhere. The bees look half-starved at the end of April, especially the new packages, but by the end of May they may be bursting with 20-30 lbs of dandelion honey. May and June are probably the most crucial months here; the colonies increase in population very rapidly, and the beekeeper must make sure the colonies have sufficient space within the brood chamber to encourage growth while preventing swarming. Having just moved here from Arizona, I would call the month of May INTENSE. There is a sense of urgency in the air as trees leaf out, flowers bloom, insects emerge, and storm windows come off. Everyone knows, including the bees, that they have three to four short months to get everything done before the cold sets in again.

Basil describes the "Horizontal Two-Queen System" as an effective system of perennial colony management. In a nutshell, it is geared toward ensuring that colonies with young queens survive through winter. If you begin by hiving a new package on foundation in April, your only expectation is that the new package builds up sufficiently to occupy three deep brood chambers filled with honey by mid-September. The following year, in mid-May, the wintered package now becomes the parent colony. It is divided by removing one of the three deep brood boxes, leaving the queen in the other two deeps. A new queen is introduced into the divide and the divide is managed as a package; that is, the only goal is to ensure that the new divide occupies three deep brood chambers by September to survive the upcoming winter. The parent colony left in two deep brood chambers is topped with as many honey supers as it can fill, which in Minnesota can be many. The parent colonies are the honey producing colonies. They have 1-year-old queens that have come through one winter. In late summer, the honey is harvested, and the parent colony is depopulated. The new divide winters, and becomes the parent colony and honey producer the following summer.

I'll have to admit that when I took the short course from Basil, I didn't get what was so great or different about his system at first until he spelled out the advantages. First, when this management system is used, no wintering colony will have a queen older than one year, and all colonies will never have queens older than two years. Second, wintering success is significantly increased because only half of the number of colonies in an apiary during the summer are wintered, these being the younger ones, so honey needed for winter food stores is cut in half. Third, queen acceptance problems are minimized because introducing a queen into a divide is much easier than requeening a strong colony. And finally, when colonies are divided in the spring, the parent colonies tend not to swarm. There are also advantages to depopulating colonies in the fall. Depopulating is of course a euphemism for killing off a colony of bees. What could be the advantage to this? Do they really need to be depopulated, or can you sell them to a beekeeper down South? I'll have to leave you hanging on these thoughts until later in the summer when I discuss preparing your colonies for winter.

So where does the "Horizontal Two-Queen" part come in? To understand Basil's terminology, it is helpful to consider a "Vertical Two-Queen" colony. Here, a divide is made from a wintered colony, but is placed right back on top of a parent colony and given a new queen. Before or during the honey flow, the screen between the old and new queens is removed, the two queen colony is supered. From my limited experience with these two-queen colonies in Minnesota, the top supers are impossible to reach without climbing on top of something, and worse yet, the whole stack has a tendency to topple over, sending bees, frames, and boxes flying. Basil didn't like the hassle of these tall colonies, so he decided to leave the divide on

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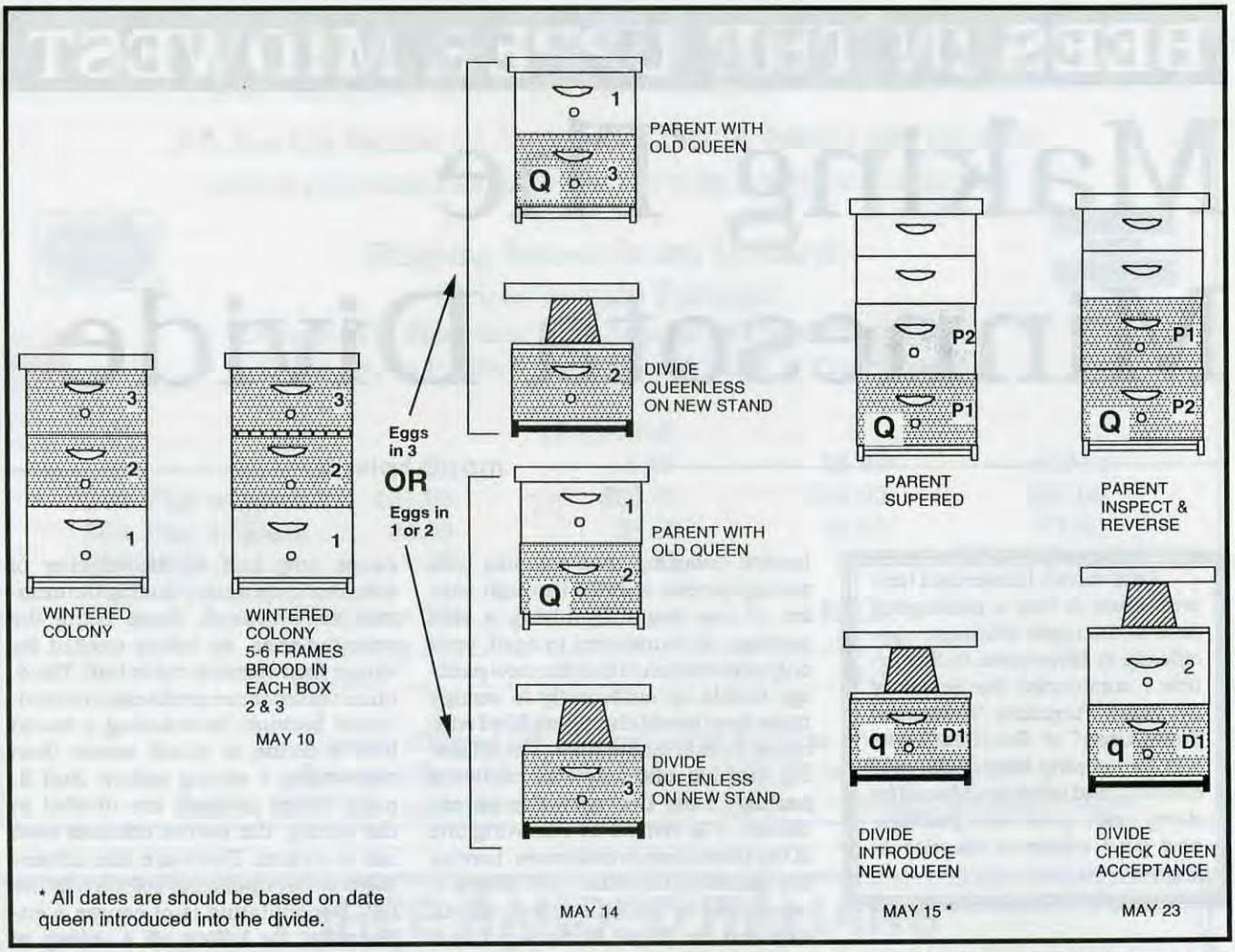


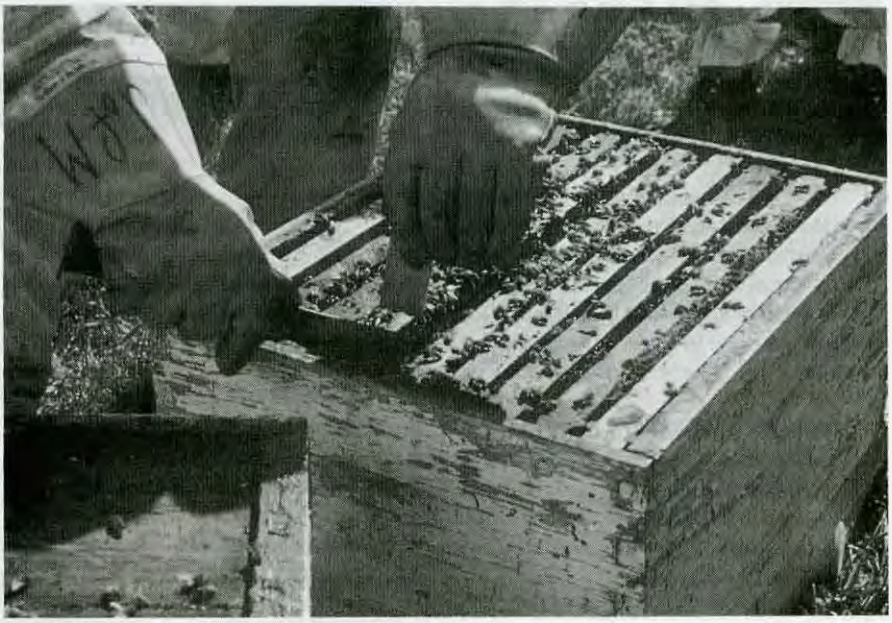
Making a divide from a wintered colony in three deep brood boxes. A queen excluder is placed between the second and third boxes. After 4 days, if eggs are found in the top hive body you know the queen is there and the middle box is used for the divide. If eggs are found in one of the bottom two hive bodies then the queen is there and the top hive body is used for the divide. Q = wintered queen. q = new queen. P= parent colony. D = divide.

MAKING THE MINNESOTA DIVIDE ... Cont. From Pg. 145

the ground. His research indicated that the net productivity of a colony managed as two separate units, (i.e., the parent and the divide), is much greater than that of a "Vertical Two-Queen" system. In other words, the total amount of honey produced by the divide plus the parent colony was greater than the honey produced by one vertical two-queen colony. That's worth thinking about.

Here's what to do with your new package in May. You should inspect your new package of bees every seven - ten days to check for eggs, unsealed and sealed brood. Continue providing a continuous supply of sugar

Wintered apiary in April. Winter covers are still on the colonies, and the fruit trees (in background) will not have blossoms until early May. All wintered colonies are in three deep brood boxes.



Introducing a mated queen using the "Slow Release Method." The queen, in a mailing cage, is usually purchased from a southern queen breeder.

syrup until nectar is available from dandelions and fruit trees. Finally, provide room for expansion by adding a second deep hive body when about 80% of the comb surface has been drawn. This will occur approximately four - six weeks after hiving the package if you are using all foundation, and one week earlier if you started with drawn comb.

The following instructions on how to make a divide from a wintered colony are excerpts from the Basic Management Manual used in the short course:

Dividing a Colony

I. Preparations

a. Strong, wintered colonies should be divided about six - eight weeks before the main honey flow (during the dandelion bloom, approximately mid-May in the Twin City area). Before making the divide, clean the bottom board of the wintered colony and reverse the hive bodies to encourage upward growth of the colony. Provide pollen substitute and give four Terramycin (TM) treatments in April and May. Apistan strips may need to be put in the colonies if *Varroa* mites are present; however, it will be too cold to use menthol to treat for tracheal mites until later in May.

b. The colony that is to be divided should have a brood chamber consisting of three deep hive bodies, a large adult bee population, and a minimum of 10 good frames of brood (1200-1600 sq. in.) by mid-May.

c. A young mated queen, an additional hive stand, bottom board, a set of covers, and at least one deep hive body with frames of drawn comb and/or foundation and a gravity feeder (feeder pail) with sugar syrup (1:1) are needed to make the divide. In most cases, the mated queen will be purchased from a southern queen breeder.

d. If the divide cannot be made immediately after the queen is obtained, she should be kept in a cool, dark and quiet place, and provided with a small drop of water once daily until the divide is made. A queen can be kept in this condition for several days.

II. Procedures

Also refer to the drawings. Numbers in ( ) refer to box numbers on the Figure.

a. At least four days prior to the expected arrival of your queen, the brood should be divided into two approximately equal portions. Half of the frames containing brood (5-7) should be in the top hive body (3) and the other half (5-7) should be in the middle hive body (2). If you have more than 14 frames of brood the remainder should go in bottom hive body (1). To isolate the queen in one of these two brood units, a queen excluder is placed between top (3) and middle (2) hive bodies.

b. When the divide is made four+ days later, the hive bodies are inspected to find eggs. The section that contains eggs will also contain the queen, (it is not necessary to see the queen). If eggs are found in the top hive body you know the queen is there and the middle box is used for the divide. If eggs are found in one of the bottom two hive bodies then the queen is there and the top hive body is used for the divide.

c. Place the hive body that contains about half of the brood but no eggs on the bottom board at a new location in the apiary. This newly established colony is the "DIVIDE." The divide should stay in the same apiary at least 24 hours to allow old bees to fly back to the original colony.

d. The unit that contains the other half of the brood and the queen (as indicated by presence of eggs) is left at the original site and is referred to as the "PARENT." The original bottom hive body (1) is moved to the top so the queen can move up. If necessary, honey supers should be provided.

III. "Slow Release Method" for introducing new queen to the "DIVIDE"

a. The probability of queen acceptance is greater in the divide if it is fed sugar syrup to simulate a honey flow and kept queenless for a day. Therefore, provide at least one pail of 1:1 sugar syrup and wait from 12 to 48 hours to install the queen in the divide using the slow release method.

b. To install the queen, remove the cork from the candy end of the

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queen cage, and make a hole in the candy with a small nail (frame nail). Slightly separate two frames containing brood in the middle of the hive body. Suspend the queen cage in this space with the screen down centered on the frame just below the top bar. These two frames will have to be pushed together somewhat to hold the queen cage in place. Close up the hive.

c. Be sure to refill pail of 1:1 sugar syrup if necessary. Do not disturb for 5-7 days.

IV. Following Divide

a. Inspect both the parent and the divide after 5-7 days. The presence of eggs and/or growing larvae indicates that the colony is queen right. A deep hive body, preferably with empty drawn combs, should be added on top of the DIVIDE.

Next time, I will discuss summer management of the package, divide, and parent colony. I also want to talk about the success I've had using Basil's system and ways I've tried to modify it by introducing queen cells into the divides rather than mated queens purchased from a southern queen breeder.

Marl Spivak is Extension Apiculturist at the University of Minnesota, St. Paul. She has worked with AHB in the tropics, and is teaching a queen rearing course this summer.

Get To Know Your SMOKER

richard bonney

Most of us take our smokers for granted. It is something you use without much thought once you've learned the basics how to light it, what makes good fuel, how much smoke to apply. This is as it should be. The smoker is only a tool. Learn to use it, then do it routinely. There are plenty of other things to think about as you work the bees.

Yet smoking does not always go smoothly and we wonder – is there a best smoker? A best fuel? A best way to apply smoke? For any of these questions the answer is probably not, but some things are usually better than others.

I have owned several smokers over the years, tried others and burned a variety of fuels. With both smokers and fuels, I have developed prejudices. For instance, I have long advocated that a smoker should never be less than four inches in diameter. The smaller ones, 3-1/2 inches for instance, were just too hard to light, didn't hold enough fuel, and seemed more prone to going out at awkward times. To the best of my knowledge this size is no longer available, except perhaps on the used market. I would not advise a beginner to acquire one of these. At the same time, I am aware that many, many beekeepers have used this size over the years with no problems. However, I also know that some beekeepers do not use a smoker at all. Is this because they started out with a small one, couldn't make it work satisfactorily and abandoned smoking entirely? Perhaps.

Today, when buying a new smoker, diameter is moot. All of those readily available are four inches in diameter, but, there is a choice in the height. Two are standard seven and 10 inches. For most of us the smaller size is adequate. Properly lit and stoked, it will burn long enough to allow routine inspection of at least two or three hives, and adding a little fuel now and then is no big deal if you work at a hive for a while. But when you're working a large number of hives, refueling becomes one more chore to worry about. It is nice to have a larger smoker, and the added weight seems insignificant.

Another choice that is quickly disappearing is that of construction material. Over the years smokers have been available in copper, galvanized steel, tinplate and, most recently, stainless steel. I haven't seen copper or galvanized for a number of years, and tinplate, though still available, is fading from the scene. The only real choice is stainless. My own experience has been with all of the materials except copper, and stainless is by far my preference for solid construction and durability.

Start with some crumpled newspaper

Yet another decision concerns the heat shield. The body of a smoker gets hot. However, the bellows makes an adequate handle and in the ordinary course of events there is no reason to hold the smoker by its body. Some beekeepers, though, hold the smoker between their legs when it is not actually in use. The heat shield, usually a wire cage then becomes worthwhile, insuring that there is no direct contact between smoker body and human legs. I don't hold my smoker this way so that advantage is lost on me.

Most smokers have a hook on the front so they can hang from a suitable support – the edge of a hive body or super, for instance. This, too, is a questionable advantage in my mind. I occasionally hang my smoker from the edge of the hive, but seldom for long. It gets in the way as I work, but worse, I usually find that the bees become oversmoked. The spout hangs over the top of the open hive and depending on air currents, it may continually waft smoke over the frames. Oversmoking is undesirable: the bees will become insensitive to the smoke and sometimes become downright belligerent. I usually just set the smoker on the ground next to the hive.

The subject of smoker fuel can often provoke a lively discussion. We have many choices — wood shavings, wood chips, pine needles, rotted wood (as from an old tree stump), rolled corrugated cardboard, burlap, binder twine, and more. Conventional wisdom gives a few cautions. Burlap and twine may have been treated with pesticides which can be carried in the smoke. If there is any question, let the suspect material weather outside for a few months. Another caution involves oily rags; the smoke from burning petroleum products can provoke the bees. I have seen recommendations that oily rags be used, that they burn well and make lots of smoke. I choose not to use them myself.

I prefer wood shavings. I like the way they burn and, where I live, they are easy to find. Woodworking shops and sawmills abound and they are usually happy to give some away. A five- or ten-gallon container of shavings will last a long time in the beeyard. I have also used pine needles. These are okay but burn a little too fast. Hay is often suggested as a fuel but it, too, is very fast burning. Sumac bobs work well (if they grow where you live). These are the red seed pods on the staghorn sumac that appear in the fall. Collect a pailful in the fall and let them dry over winter. If you collect them the following spring they will probably have dried by themselves, but there might not be as many available. Weather and birds work them over in the interim.

A favorite fuel for many is corrugated cardboard. I have never tried it but I understand that a strip of cardboard, rolled to fit the inner diameter of the smoker, burns very well, once started.

Starting the smoker is sometimes easier said than done. My technique has been to crumple a half-sheet of newspaper, light it, and stuff it loosely into the bottom of the smoker. I pump the bellows gently while stuffing, and keep pumping while dribbling in fuel. The object is to keep the paper blazing while you add your fuel of choice. The smoker should not be filled all the way yet. The goal is to get a small amount of fuel burning well. After a few minutes the smoker can be filled, with reasonable confidence that it will keep burning. The actual flame will go out, of course, but fire will continue to smolder. A caution here — don't pack the fuel in tightly. Cramming may suffocate that smoldering fire. I usually fill mine loosely, then bounce it on the ground a couple of times to settle the fuel, topping it off after.

Once the smoker is burning well, I put a handful of green grass *on top* of the fuel. This keeps pieces of loose fuel and ash from escaping as the bellows is pumped, especially when the smoker is pointed into the hive. The grass also cools the smoke a little if there has been vigorous pumping. Smoke can get too hot and it is quite possible to cook a few bees, or at least to singe their wings. Don't be too enthusiastic with your pumping.

Let lighting the smoker be the very first thing you do once you set out to work the bees. Do it before you put on your veil, before you get out the supers you're planning to put on, before you do anything else. Smokers are capricious. They seem to go out without the slightest provocation.

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. pump the bellows gently to get the paper burning, then dribble in the fuel.

Once it's burning well, top it off with some green grass.

Judicious smoking as you open the hive can make a world of difference in your bees' disposition. Keep the smoker handy, but don't overdo. An occasional puff keeps the bees mellow.

Actually, they go out for one of two reasons — out of fuel or not lit well. If you did not light your smoker properly, it will usually go out early, within a very few minutes of lighting. So light it first and set it aside while you finish getting ready. If the smoker is going to go out it will happen during this initial period. When you pick it up to start work, you will realize what has happened and can recover. If you lighted it last, and it went out after you opened the hive, then there you stand, bees all agitated and no smoke.

When you finish working the bees for the day you will probably discover the smoker has really come into its own, that it is burning beautifully. You have a choice. Let it continue until it has burned out or smother it by placing a plug in the spout. The residue of partly burned shavings is great for starting the fire next time. I start the new fire right on top of the residue. If there is too much, I pour some back into the pail. Of course, this is done only when the smoker has been unused for hours or days. I don't want to set my fuel bucket on fire.

As far as smoker cleaning and maintenance goes, periodically clean the accumulated soot from the spout and the juncture of body and lid. Over time the spout opening can become quite small as soot builds up, restricting the flow of smoke. It also can become difficult to open and close the smoker as soot and creosote builds up around the lid juncture.

Keep an eye on the port where air is blown from the bellows into the body of the smoker. It is not unusual for loose fuel to catch there. Obviously, this restricts the air flow and the smoker is not going to work well.

The bellows itself occasionally needs attention. They do wear out, usually the fabric first. Duct tape will greatly extend the life of a bellows. At some point, though, it will be too far gone to save. Replacement bellows are available from regular beekeeping equipment sources. It becomes a matter of unscrewing the old and screwing on the new, with two or four small screws. Perhaps a little drilling will be necessary if the screw holes don't line up exactly but, generally speaking, replacement bellows are adaptable.

Think about your smoker now and then. Treat it as the good and useful tool it is. And one way to really appreciate it is to work your bees one time *without* using smoke. You will probably get to know them in a different way.

WHAT DO YOU NEED TO KNOW?

BUYING QUEENS

walter clark

Buying newly mated queens for colony replacement stock is a fascinating prospect. The queen controls the hive through pheromones, while her reproductive material acts as the genetic Grand Central Station for her offspring. New workers inherit their behavioral characteristics from her (and the drone donor) with every egg she lays, and each season she transmits these traits to successive generations, contributing to the basic genetic pool on wing in the beeyard. We have some degree of control over these traits, and can use them to our advantage. This provides unlimited and exciting opportunities for improvement in everyday yard management and queen performance.

Beekeepers have had an interest in controlling these traits since early Egyptian times. However, it is only with the advent of modern commercial production techniques that we have been able to mold these desirable behaviors to our favor. Centuries ago, characteristics were left to natural selection, or actually destroyed by honey-gatherers who killed the bees they found in the forests or kept in bee gums. Ironically, destroying their bees at harvest eliminated stock that had produced the biggest honey crops.

In today's queen rearing industry, bee breeders use artificial insemination, stock selection and careful breeding practices to gain trait advantages. Desirable characteristics such as fast spring build-up, honey production, gentleness, hygienic behavior, overwintering, and disease resistance are what sells good queens. Breeding businesses sell queens that produce bees they believe beekeepers are looking for and continue to improve stock by selecting for certain traits over time.

In 1878, A.I. Root first suggested bees could be shipped in combless packages. Since then, queens and package bees have been mailed from breeders to buyers all over the U.S., Canada and the world, allowing the business to thrive. Dozens of queen breeders now operate across the nation, some raising small numbers of specially-bred stock queens while others produce and sell tens of thousands of replacement queens each year.

What Are You Buying?

Knowing about queen traits doesn't necessarily equip you to *buy* them, and all of us at some time must buy bees, either by mail order or from a local supplier. When buying queens and packages, how can you assure you're getting bees with the traits you desire? Do you know you're getting those qualities, year after year? What information do you use in selecting a queen breeder? Which breeder can provide you with the product you're looking for?

At the American Beekeeping Federation meeting in Orlando, Florida, I had the opportunity to discuss these topics with a number of queen and package producers from across the U.S. My quest to find information on good queens was twofold. First, my queen purchases in the past two years had provided what I would consider less than adequate results, so I was eager to find a breeder to do business with. Second, the topic of queen breeding and subsequent yard performance is a hotly debated issue among the best of the world's beekeepers. I've often wondered why, and getting expert opinions seemed a good place to go to solve some of these debates.

Know What You Want

In one sense, breeders don't sell queens, they sell traits. Be prepared to discuss these traits and lines of bees with breeders and know what you want. Have a background knowledge of bee races, your local environmental conditions, seasonal requirements, and the general traits needed to fit your locale.

We've all read breeders' advertisements. They state, among other claims: *"great queens," "national performer," "tracheal mite resistance," "hybrid cross," "gentle,"* or *"early build-up."* They may also state the race or hybrid of bees for sale: *Italian, Starline, Old* or *New World Carniolan, Buckfast, Caucasian* and the *Yugoslavian* (ARS-Y-C-1), (distributed by breeders for the first time in 1994). Like any advertisement, wading through the claims to the facts can be tough. Learn "breeder talk" before you buy.

> In one sense, queen producers don't sell queens, they sell traits.

Ask Questions

I asked Ralph Russ, queen

breeder from Lake Hamilton, FL, where to start. "Call and ask questions," Russ said. "The first question you ask a breeder is 'what genetic line are you carrying?' Really, knowing what race you want is where you start. It's *the* critical factor in the quest for the ideal bee."

Russ said one of the ways to find the "ideal bee" is to pay your breeder a visit. "Can you view a breeder's operation? Take a tour and get an explanation of a breeder's methods. Many will be happy to help if you call ahead. This can give you a wealth of knowledge." Russ reemphasized the importance of picking a race. "You know what you want out of your bees. For example, Italians are a good place to start for beekeepers who want early spring build-up. Their queens are easier to spot and they're good honey producers. But if you're overwintering up north and brooding late is a concern, traditional Italians might not be a good pick. Carniolans might be better. It depends on what you want."

Russ said pick a bee from your area of the country if possible for better adaptation. "Queen breeders are essentially in four areas of the country: West (California), Texas, the Deep South, and Florida. Buy regionally. If you're using a bee from your part of the country (or at least in your latitude, or region), you're more likely to have a bee adapted for success.

Run A Test

One of the best ways to determine what queen is best for you is to run a test. Testing several different queens in your area will give you an idea whether or not they are good honey producers and perform well under local conditions. "I know all beekeepers aren't large enough to do it, but running 10 queens of one type per year, one in the middle of each yard, will give you an idea of their performance," said Jerry Shuman, owner of Shuman Apiaries, Baxley, GA. He suggested a minimum of three queens over a two year period before making a decision on the results.

For testing, using more than one strain is important to fairness. Buy queens from different parts of the country and different breeders, then give them a run. "Different strains perform better at different times of the year. Some are fast builders and tend to fly in hotter weather. Some are slow builders in the spring but work steadily through colder weather and may end up with the same honey crop. Each strain has it's own behaviors, and this needs to be closely monitored if a test is to be generally fair," Shuman said. "Use the same criteria for each bee throughout the year, and keep close records. Then make your pick."

TLC

Shipping queens and packages requires careful handling. Be sure you know the date of your bees' arrival and if possible forewarn the postal service they're coming. Unfortunately, being in transit is stressful for bees, so damage does occur. Exposure to extremes of cold and heat, shaking and rough handling en route can cause problems. Shippers do all they can to avoid these problems.

Most breeders are good about replacing bees and guaranteeing live arrival. But after their arrival, you must care for new queens. Don't leave them in a hot car or on a cold back porch. Remember to immediately provide the bees with water, and preferably a very watery honey/water mixture dropped on the cage screen. This will sustain them for a day or so until you can get them hived. Be sure they also have fresh water and preferably a dark, somewhat cool place for storage. Use, or store in a queen bank as soon as weather permits to increase survival rates. It's a fact that (unless you're very lucky) not every queen you order will live – plan to order extras as needed.

Fall requeening is suggested by some producers, but buyers need to be aware that some "bank," or store their queens through the summer, which if done for extended periods can leave queens with less vitality. Ask breeders about this practice. Fall requeening with good queens gives colonies a boost going into winter, and earlier, stronger spring populations the following year.

What about migratory operations that don't overwinter? Pat Heitkam, of Heitkams' Honey Bees, Orland, CA, had the answers. "The concern of the migratory queen buyer is having a queen that performs year 'round," Pat opined. "The thing about migratory operations is that they follow the warm weather. They're always on the bloom and continually in warm-weather production. That wears queens out fast. They're working nectar, pollen and being fed, so they're laying eggs all year long. Migratory operations must pick a strong brood-builder for high populations and requeen on a regular basis."

Other questions breeders suggested asking when looking for queen sources included: whether or not breeding yards are operationally separate? What weather conditions have been like in the breeder's area? Is there general isolation for drone yards? How is drone saturation attained? Is the outfit annually requeened? And, what kind of stock is introduced into the operation, and how frequently?

Price and Service

Like any other purchase, beekeepers tend to equate price with quality, with the highest price being the best and the lowest price, the worst. Many times, queen buyers are price conscious shoppers, so the lower the price the better.

"We work to provide our customers with not only a quality product, but a reasonable price and prompt service," says Reg Wilbanks, of Wilbanks Apiaries, Claxton, Georgia. Wilbanks is one of the largest breeders in the southern tier of states, and a sharp businessman with whom the customer comes first. "I know many beekeepers buy on price, but equally important is producing and delivering a quality product," Wilbanks said. "Queen buyers have to realize that a higher price much of the time is related to service as well as reputability of the breeder's product. Those factors keep queen breeders in business, too, not just trying to under price the competition," he added.

Jerry Shuman agrees. "We have our customer in mind all through the season. Reputation and service are number one." Shuman echoed Wilbanks on pricing. "Price isn't as critical as most people think, product is. A good strong bee delivered healthy and on time makes happy customers," Shuman said. Jerry's wife,

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Beverley, commented, "We've built our business on references and by meeting our customers. We suggest anyone interested in buying queens call breeders for references. From their customers you'll find out about their service. Repeat business over the years is the way they built their reputation."

Jeff Barnett of Genesis Bee Co. in Greenville, TN, says reliability is the deciding factor in picking a breeder to work with. Barnett is a fourth generation beekeeper, and knows the queen trade. "The main factor is reliability. I think the way a breeder treats customers is evidence of the way he treats his bees. No queen is unimportant, and no order is too small. If you're ordering one or 1,000, they need to be customer-friendly with you."

Network

Many breeders don't advertise and are unable to take on additional customers, so word of mouth is sometimes critical to finding a good breeder. Get your order in early – many queen and package operations are booked up as early as December of the prior year, but most can take orders of less than 500 with at least 30 to 60 days notice.

For breeders, timing is everything. Having customers with good business habits who pay their bills on time is important, since many breeders require payment in full several weeks ahead of shipping dates. Keeping queens healthy requires common sense at both ends (see side bar). Stay in touch with your breeder for details on your shipping and arrival dates.

Buying queens requires a thorough understanding of your apiary's needs. Use good judgement on your end when making a purchase. Find a breeder who provides you the service and product you want. Most of all, remember to keep good records and try different sources of queens for continued success.

Walter Clark is a beekeeper and writer with interests in marketing, promotion and business management. He keeps his family and bees safely tucked away in the clover fields near Des Moines, Iowa.

THE LEGACY

the old timer

It promises to be a blistering hot day for already the sun on my back – like a living thing – makes my skin, through a well-worn work-shirt, tingle. However, I must be getting older because I seem to be able to take more heat nowadays.

Moving along rather aimlessly across the dusty hardpan, on a whim, I stop, turn about and scrutinize my apiary 200 yards away – ten hives which I deposited among wide-spaced trees in a little balsam grove last night. The truck (which brought us here) stands out of sight behind a rocky bluff in deep shade. A creek runs close by – melt-waters from the white-clad peaks above – and from here I can just see its flashing sparkles as it courses across a sunlit open stretch. Tendrils of aromatic smoke from my breakfast fire – hanging in the still air – cause me to take deep breaths of appreciation. Why am I 80 miles from home with so few hives? It's true that the missus and I and the animals consume great quantities of honey but there is ample bee-pasture all around our homestead. Could it be that I'm eccentric, a wildernessaholic? Maybe it's the scenery – the smells – the wildlife – plants of all kinds growing in the most unlikeliest of places – or something indefinable. I can no more stifle my obsession with unexplored, uninhabited back-country than I could fly. My spirits soar when I see great sunlit expanses. I wish I could go back in time and see what the entire world was like before man messed it up. In my opinion, land that is still wild is more valuable than gold. I'm lucky to live in this big 'blank spot' (which keeps out city folks) on the map of Canada, where I can indulge in foot-loose freedom far from the madding crowd. After a day or two of exploration in this case, I'll be going home to other chores, returning every few days to take off honey and explore that intriguing looking pass above the long slope or that gully with the extraordinary colored rock walls or all those rare yew trees. Crazy? – don't scoff – you'd be the same. If you don't believe me, pick a mountain with game trails for easier access to the heights and spend a day or more. When you come down you'll be changed, guaranteed, and not all of you will return to the big city, also guaranteed.

Herb's death was so sudden, even his sister had only a few hours to visit.

Turning again – sauntering pensively – heading down over the trail I round the end of a group of alder and willow bushes I freeze in disbelief – foot poised in mid-air. To the right and only three or four feet away, covered by shrubbery is a hive; three stories high although it's difficult to tell. Moving closer I perceive streams of honey bees coming and going through a 'hole' in the vegetation just above the outer cover. In a moment, snapping out of my stupor, I begin tearing at the matted salal vines and thick grasses which made me dig in my heels and get several stings in the process. A fir seedling has somehow become rooted under the edge of the bottom board and reached a height of two feet. Thanks to my efforts, the bustling workers have switched routes to the partly open and more convenient lower entrance. I shift a heavy flat rock closer to the bottom board and restrain the springy grasses for better movement. Then, settling back on my heels and mopping my brow, I let my thoughts run wild as to whose and why, for this colony had evidently been here several years.

Suddenly I experience a second shock; 20 feet further on is another hive – again almost obscured by foliage. Rising quickly I discover a third and fourth until to my astonishment as I traverse the length of the alder hedge I encounter four more three-story hives. I now had the answer – and feel my stomach contract with excitement. This is old Herb Van Der Lee's long-lost apiary. I must be more than a little

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THE LEGACY ... Cont. From Pg. 157

thick because I had reached the third hive before the light came on. Ten years ago this old Dutch immigrant passed away, ending a lifetime of service. Herb was well known even in a far-flung community as ours. His big carefully-tendered market-garden which through the years became a mecca for townsfolk who visited and bought fruits, vegetables and flowers in season – and honey.

His death was so sudden that even his sister who journeyed to his bedside from Holland was there only a few hours before the end. None of us in the valley knew because we don't have phones and over a hundred miles separates us from town. The news reached us when Bill Kennedy, a neighbor ran into Herb's sister, who was busy packing his personal effects and boarding up the cabin. She told him that her brother wanted us to share his bees and equipment and also many thanks for the old times – she also said she was completely mystified by his explanation as to the whereabouts of his apiary. She alluded, waving, that they were somewhere 'that way.' Although we searched that first year and kept our eyes open not a trace of his bees were found, which isn't surprising with a million square miles of wilderness to cover.

Since life is a mish-mash of interconnected pieces – mostly beyond our kin – it was really no surprise when Mrs. Nikerk's grandson – intrigued by her glowing description of wilderness life – scraped and saved and with his wife and son and worldly possessions (even an old Volkswagon van) journeyed to this new land and settled a year ago in Herb's old cabin. He has already a cow, two goats, chickens and a huge market-garden. And now as of today – a ready-made apiary.

I made rather a rough and hurried job of clearing the hive fronts – intending to do more later – then sat to one side in the shade, wedged into thick alder stems – only half seeing the intensely bright panorama before me. My thoughts were wholly on this backwoods drama. For the last 10 years these eight colonies of honey bees have been doing fine on their own – thank you – and surely there's a lesson to be learned somewhere in all this. I'm of the opinion that Dame Nature doesn't need man – but without Her – I very much suspect that all of us and everything we have achieved, dear friend, will cease to exist. After all – its a fact, that man with all his factories and know-how, cannot make one ounce of food. The handful of dirt which I let slip through my fingers contain a myriad unseen denizens – all doing their job carrying us – mankind – along selflessly. Also helping to maintain the 'web of life' are the visible flora and fauna right up to and including the legendary grizzly. Then of course there's the Sun without which nothing would be. I've tried mightily to understand even a small part of the natural system but nearing the end of my life I understood no more than I did in the beginning. However – lately I've had this extraordinary feeling that the honey bee is a bridge between mankind and nature – make of this what you will.

Like the man says – there are no end to strange things in this land of the midnight sun.

IS THERE A POLLINATION CONTRACT IN YOUR FUTURE?

mary & bill weaver

Beekeepers who pollinate too often operate without contracts. This became all too clear when we talked to many who emphasized their trust in the farmers they work with to take care of their bees. In fact one New York beekeeper told us simply, "They trust me and I trust them" and a New Jersey beekeeper described his relationship with the farmers for whom he pollinated as "a love affair that lasts most of your life. They treat you the way you want to be treated."

But we also heard horror stories – colonies sprayed and killed with pesticides; eight-wheel tractors running over pallets of hives; colonies that, after four days of rain, floated down river; colonies stolen and never recovered. It goes without saying, but we'll say it anyway – these circumstances can be devastating to any beekeeping business.

What do you do if one of these horror stories happens to you and your formerly 'oh-so-friendly' grower, who only weeks ago had spoken of his great concern for the welfare of your bees, suddenly balks at making reparations?

At a time like this, having a signed contract, a legal instrument on your side can be a great help, and, if the damage was great, can be all that stands between you and financial disaster. At such a time you'll be glad you had good business sense and insisted on a signed contract, instead of a "Mr. Nice Guy" who just hoped for the best.

But what should be in one of these contracts? Who writes it? Where can you get one? Many state Extension services provide samples, as do many growers and beekeepers who pollinate regularly. But each is different, depending on the complexity of the situation, past experiences and the like. No matter where you get a sample contract, read it carefully and know what it contains. Below are listed most of the problem areas both beekeepers and growers run into.

– Beekeepers –

Theft, Vandalism and Liability Some contracts specify that the *grower* is liable for theft, vandalism and stinging while the hives are placed for pollination on his land. A beekeeper looking for permanent sites for his hives will choose those that minimize the chances for theft, vandalism and stinging liability, but when he moves his hives to a pollination site he has no control over these potential problems.

And problems happen. We have a friend in Michigan who owns a large cherry orchard. He now uses his own bees for pollination but several years ago he routinely rented bees from a local beekeeper. And one year, before the cherry trees even blossomed, all those hives were stolen. They were never recovered. There was no contract.

Being an honest man, our friend called his insurance agent and said he felt he was liable because the rented hives had been placed on his land. His insurance company paid. That beekeeper was lucky. With a less considerate orchard owner, *and without a contract*, he could have very easily been left out in the cold.

Payment Due A good contract will specify the *date* of payment as well as the *amount*. A New Jersey beekeeper we spoke to stopped doing blueberry pollination a number of years ago because he frequently had to fight for payments often delayed until December or even January. Meanwhile, his own expenses needed to be paid. He now suggests a contract that specifies that 10% of the pollination fee be paid *before* the hives are moved into place to cover moving expenses, with payment in full to be made within a month. Some contracts specify a larger percentage up front. Payment in full within a month seemed to be pretty standard with most of the beekeepers we contacted.

Unit Payment In determining payment per hive, (or better, determining *your* cost), many factors need to be taken into account, the most important being how far you'll need to transport the hives, and the cost of labor. Consider also whether by locating on a given farm for pollination, you'll lose a honey crop you could have gotten at another location (often called "opportunity cost"). When pollinating squash, cantaloupes, cucumbers, or cranberries, for example, hives frequently not only make no honey, they actually lose weight and must be fed after the pollination contract is complete. On other crops though, your bees may clearly gain a honey crop, and pollination may be done for free, as in citrus and sunflower areas.

Consider also that when moving bees you will likely lose some hives outright, and that some queens will be lost. Exposure to bees from other sources and the potential for contracting diseases or mites that must be treated should also be part of the equation.

If you are in a major agricultural area it's easy enough

Continued on Next Page

POLLINATION CONTRACT ... Cont. From Pg. 159

Managing bees for pollination is very different than for honey production. Know the difference.

to find out what standard pollination rates are for different crops. Then consider whether, with the expenses you'll have (your costs) and the honey gained or lost (opportunity cost), you can *afford* to do pollination for that price. If, on the other hand, this experience is new to both you and the grower setting a price may not be so easy. Check the journals, *know your costs*, and begin negotiations from these perspectives.

Some beekeepers do a sort of barter arrangement. One fellow we spoke to pollinates pumpkins for "free", but in exchange he gets all the sweet corn and pumpkins he can use; can sell his honey at the farmer's roadside stand, and has permanent locations elsewhere on his land which produce a good crop of honey in addition to providing pollination for the farmer.

Location This is an important point to discuss in advance, or you may find yourself carrying hives through ankle deep mud and under a barbed wire fence, as did one beekeeper we spoke to.

Access by truck needs to be good even in wet weather. High ground is important if flooding of a nearby creek is a possibility. If the location is at the end of a field, ask the farmer about turning space for large implements, so hives are not accidentally sideswiped by a careless employee on a tractor.

For spring pollination, a location that receives full sun early in the day and is sheltered from the wind is important to get the bees working as early as possible. For mid-summer pollination, particularly in the south, look for shade from the heat of the day for the hives. Colonies exposed to full sun in hot weather spend a lot of energy carrying water to cool the inside. Placing hives in the shade increases their efficiency as pollinators. Also check that a clean water supply is available nearby. If not, consider providing one – a barrel or bucket, filled every other day or so by the grower.

Possible wildfire is also a consideration in the south during dry seasons. Some southern pollinators rake up and burn pine straw and mow and burn tall weeds before moving their hives into a location to reduce the danger of fire damage to the hives.

Before moving your bees into a new site it's wise to visit and look things over. Then you can talk to the farmer about potential problems you spot, like padlocks on gates, before you find yourself in a bad situation.

Pesticide Use The contract should specify that no chemical material known to be harmful to bees will be used while the colonies are present without the understanding and consent of the beekeeper. Some contracts also ask that the beekeeper be notified even when neighboring farmers plan to use toxic sprays. This is especially important in mixed agricultural areas.

Be particularly aware of the damage that encapsulated pesticides like Penncap-M® can do to bees. These are applied as small particles similar in size to pollen. The bees gather them incidentally along with pollen and store them in the comb. As the pesticide-laden pollen is fed to the brood, they are killed. Whole colonies can die out this way.

In case the farmer has to use a harmful chemical while the bees are in location, the contract should state what notice he must give you to move or cover your bees, along with payment you will receive for any extra moves. Such a clause in the contract should prevent a farmer from calling at 10:00 p.m., telling you the bees must be moved by 7:00 a.m. the next morning because of spray. Such situations can and do happen. Don't let it happen to you. A clause may even be included regarding replacement costs.

One beekeeper we spoke to said that some growers in his area provide a marshalling or staging yard away from sprays. This same area can be used to move the hives to temporarily at the end of pollination, also giving the beekeeper time to truck the bees back home or to the next job in an orderly fashion. This type of area is beneficial for both beekeeper and grower as each has a wider 'window' to accomplish their respective tasks.

Some enlightened beekeepers and growers have begun using this staging area in even more 'profitable' ways. For instance, a pollinator can 'drop' his bees in one of these areas one to several days ahead of schedule. The grower, who has the necessary moving equipment then places the pallets in the orchard at his leisure. When the bloom is complete the pallets are returned to the staging area and recovered by the beekeeper. This may significantly reduce the cost/colony to the grower, who is supplying most of the time-sensitive labor. Some provision for colony care should be agreed on beforehand so each knows what the other will do.

Special Considerations Some beekeepers like to have written in the contract, particularly for orchards, that the hives are not to be moved from where the beekeeper places them. Some growers want to keep moving the bees through the orchard from crop to crop, with new locations being within a mile of previous locations. We talked to an orchard owner in PA who does this as a matter of course, with from two to four moves a season, starting with pears, then moving to adjacent apples, and then to other fruits. Most of the beekeepers we spoke to told us they would not do pollination for an orchard owner who insisted on this (at least not without compensation).

We've pretty well covered protections for the beekeeper that should be included but contracts also spell out protection for the farmer in enumerating the beekeepers' responsibilities.

– Growers –

Number of Colonies This is the number you have committed to this job, in spite of winter losses, mites, slow spring build-up, etc. Don't overextend yourself and be ready to make good your end of the contract by obtaining colonies elsewhere. Don't short the grower.

Colony Strength The colony strength specified in contracts varies quite a bit by regions of the country. A Washington state beekeeper told us, for example, that state recommendations are for eight frames of bees with three to four frames of brood. A pollinator in South Carolina, on the other hand, promises a full six frames of brood, and if a frame is only half full of brood, he counts it as a half frame, not a full frame.

A New Jersey beekeeper says he gives seven frames of bees, with brood in five at 50°F. A California almond contract with a well-known broker specifies only a laying queen and six frames of bees.

It is to your advantage, though, to supply hives of ample strength. Weak hives won't provide good pollination, and with poor results you're not likely to be asked back next year.

David Green of Dave's Pollination Service in Hemingway, SC, emphasizes the importance of having sufficient brood in each hive. A large quantity of pollen is consumed by developing brood, forcing plenty of worker bees to gather pollen instead of nectar. Pollen gatherers, he says, do a much more effective pollination job than nectar gatherers. He describes bees collecting pollen as "rolling around like swimmers through the anthers," covering themselves with pollen, some of which they shed as they go from flower to flower, pollinating as they go.

To give good pollination service, then, Dave emphasizes having a young queen laying heavily and a large amount of brood in each hive he places for pollination, and he carefully manages his hives to accomplish this.

For spring pollination, says Doug Durant, another South Carolina beekeeper, when colonies are just building up you'll need to go through your hives frequently and equalize them, taking brood from strong hives and sharing with hives that are weaker but have adequate bees to cover the additional brood.

A New York beekeeper told us about an orchard he visited during pollination. He noticed few bees in the air and when he checked he found the hives so weak that they were almost dead. You can point out to a potential grower/customer that a pollination contract not only protects you, it also protects him by specifying the strength of the hives he'll get to do his pollinating.

You are protected by this, also. When someone tries to undersell your pollination services by providing weaker hives, armed with the pollination contract, the farmer knows that you *guarantee* a specific hive strength. The person trying to undersell you may not have colonies as strong (or, they may not know their costs – you should know both).

Dates of Service The contract should specify when the hives are to be brought in and removed. If exact dates are not given, some contracts specify how many days the beekeeper has to move hives in after the grower requests them by phone or in writing and how much notice the grower must give for the hives to be moved out. The leaving date is important, because often the grower must follow pollination immediately with a spray. The staging area mentioned earlier works extremely well here, for both grower and beekeeper.

Solid Beekeeping Practices The beekeeper commits himself to using solid beekeeping practices to keep his hives in good condition during pollination. You'll need to check a sampling of hives regularly to see if they are continuing to build, and if they need to be fed or supered. If a colony runs out of space and is overcrowded, foraging, and therefore pollination of the crop pretty much ceases.

Buying pollination services places a responsibility on the grower, too. Locations, pesticides, water . . . all must be considered.

If you are considering pollination as an economic activity, Doug DuRant recommends that you give your name to the horticulture extension and bee extension personnel at your state university and certainly at the county level. Either may be able to send customers your way. He says that for the first year or two you may struggle to get pollination work. But if you do a good job the word will get around, and farmers will be coming to you. With wild bee populations dwindling because of mites, more and more farmers who used to rely on "free" wild bees are realizing they must now hire pollination.

David Green also encourages beekeepers to try pollination, but don't jump in suddenly, he advises. Go slow and learn as you go. Managing bees for pollination is very different from managing them for honey. And remember, Dave cautions, that pollination is a service. Keep a close eye on your bees to make sure they continue to build, and take time to talk to the farmers.

Bill and Mary Weaver keep their bees in several areas of PA and move them for honey production and pollination. They almost always use a pollination contract.

David Green is interested in publishing a pollination newsletter oriented toward east coast migratory beekeepers. If you are interested in subscribing, contact him at P.O. Box 1215, Hemingway, SC 49554.

SKWARDOFF

• GETTING INVOLVED •
HELP A KID OR YOURSELF
MAKE A PERFECT FRAME

vincent doyle

When he finally notices the super sitting on my workbench his eyes look like they just might pop out of their sockets. When I tell him it's for his special exhibition frames he starts hopping up and down. Jeffrey is eight years old. When I see him bouncing around my workshop I get a real charge out of it. It is good to see a response like that. Kids today hide their emotions; "playing it cool," I think they call it. He runs his hands over the glossy surfaces. "Vince, you know what" We can make the frames now. We got some place to put them. Thanks, Vince. It's a superdooper super!" Then realizing what he'd said he looks up at me and laughs.

Well, why wouldn't he be happy. It is 'superdooper.' It looks like find furniture. It has eight hardwood dowel-pins in each dovetailed corner. The dowels are a specialty item. Wolfcraft (Wolfcraft Inc., Itasca, IL) makes them. They have fluted surfaces and you just coat them with glue and bang them into pre-drilled holes. Dowels don't work themselves out like nails because they expand and contract evenly with temperature changes, and the corners neither crack nor split. All corners have been glued and rounded off slightly so that Jeff can use the hive tool to separate the supers without splitting the wood or ruining the finish. Sanded smooth, walnut-stained, protected under three coats of urethane external spar varnish, a coat of paraffin wax on the inside to keep it clean, the super looks good. It should last.

Ridiculous, isn't it? Yes. But what the heck! It will go on the kid's colony in the spring and it will look great. Maybe I should have saved it for a Christmas present. I know that the bees won't know the difference but Jeff will. If he's going to harvest perfect frames of honey for the fall fair he might just as well put them into the perfect super. A 'superdooper super.

"Dad and I have been fishing," Jeff said when I asked where he'd been lately. "Went down to the public dock at the bay and got over 20 bullheads!"

I think he means sculpins but I let it pass. "Maple Bay or Cowichan Bay?"

"Cowichan."

"So that's why I didn't see you around. You were just down the hill from here. Why didn't you and your dad drop in?"

He hangs his little blond head, "Fishin's been too good."

Now how come I already knew that? I ruffle up his hair. Lucky boy. His father, Brian, takes him fishing. Bees will always take a back seat to that!

"Well you're here now. Are you ready to build those frames?" We selected the best the last time he was here and they lay where we left them neatly bundled and tied up with string on the workbench.

"Yeah, let's."

"We'll need some cigar-box nails 1-1/4 inch "

"Why do they call them that?"

"I don't smoke. I don't know, but they're thin and don't split skinny bits of wood so I guess they could have used them to make cigar boxes. And need a hammer and some glue. Let's see. Lepage's Sure Grip carpenter's glue 3500 lb. strength. You know what that means? It means this stuff will hold a ton and three-quarters before letting go. The wood itself is nowhere near that strong. The wood would break before the joint lets go. We could use a water-proof glue like Resorcinal but this will do."

"That's funny. You said wood, twice. Wood would."

"Yep. How much wood would a woodchuck chuck if a woodchuck could chuck wood." It's old stuff even for one so young but he laughs anyway. "So, if it will hold a ton more than my truck will carry I guess it will do, hunh? You remember how we were to keep everything square, making sure every part met at right angles?" He nods. "Well I know how tough it can be to nail things when you are just starting out but I still want you to do it yourself. So I made up this little gadget. It's called a nailing jig and before you ask, no I don't know why. But, what I do know is that it will hold all the frame parts together while you nail. And it will keep everything squared off while you do it. Can you spell 'squared off?" He spells it out for me. And that's how the nailing jig got the name Skwardoff. He thinks I'm fooling him when I tell him how it is really spelled.

I take a bundle of frame-parts from the discard pile. "Here, we can practice on these. You have to be careful when you fit end bars to top bar. End bars split easy. When you force the top bar into the slot you use a lot of pressure. Before they go into the jig we should check to make sure they fit. If they don't it's probably because they were roughly made in the first place. We may have to scrape the sides a little with a knife. Not too much though or the glue won't hold." He looks to see how the top bar is placed upside down on the bench and watches me rock the end bars into place. I hand him another bundle of parts. "You try it now."

He does exactly as he was shown, rocking the bar back and forth not side to side as I thought he might, and the end bar goes into place with a 'thunking' sound. The other end goes in just as nicely.

"It's sure tight."

"Everything seems tough when you're young. You are doing just fine. But that's good. It has to be tight for the glue to hold it. Here see how the bottom bar fits." He makes it look easy. "Okay. Now you can take it apart again."

"Take it apart? I just got it together!"

"Now we glue it. Just take some glue on your finger tip like this. Don't worry. It washes off. Spread it where you think two parts join oops, you missed a couple of spots."

"Where?"

"There, where the side of the end bar meets the top bar. I always seem to miss that same spot too. By the way, how many nails would you say we need to put a frame together?"

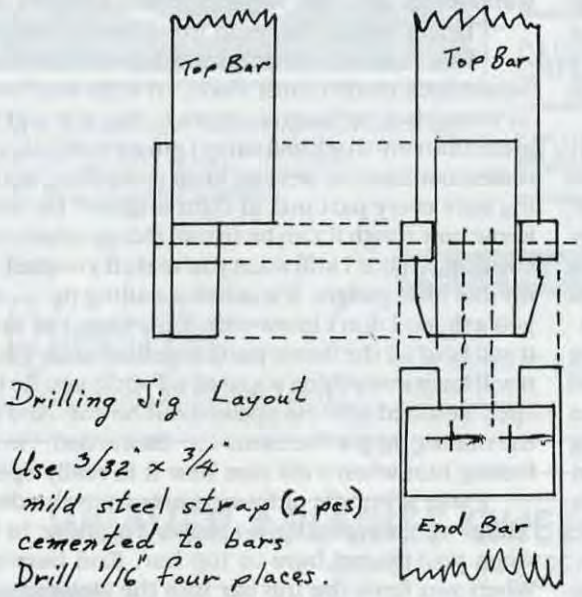
Continued on Next Page

Drilling Jig

The diagram shows how you can make this simple but important item. Once you have the metal bars drilled with the guide holes you can drill additional holes and mount them with screws or just fasten them in place on the top bar and end bar with epoxy cement. It's up to you. When you have done this you can saw away the wood directly beneath the guide holes in the metal bars.

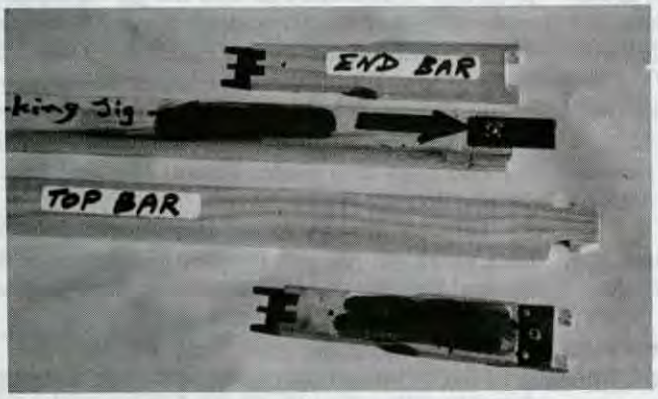
How to use the drilling jig: Turn the top bar drilling jig upside down, align and hold it flush on top of the top bar to be marked. Press a sharp object (a nail) through the guide holes to mark the top bar. Remove the drilling jig and drill through the top bar where it has been marked.

Hold the drilling jig flush with the end bar to be marked. Press a sharp object through the guide holes to mark the end bar. Remove the drilling jig and drill through the end bar where it has been marked.



Drilling Jig Layout

Use 3/32" x 3/4" mild steel strap (2 pcs) cemented to bars
Drill 1/16" four places.



SKWARD OFF ... Cont. From Pg. 163

"Four."

"How'd you figure four?"

"One in each end of the top bar. That's two and one in each end of the bottom bar. That's two more. Four."

"Would you believe, 12."

"How'd you figure 12?" He's at that age. Imitating.

"First of all, two at *each* end for both top and bottom bars. That's eight. Then we drive two more through each side bar into the top bar. Here and here." I show him how they go in under the lugs where I've pre-drilled holes to take the nails. "Those two nails under the bar are something like insurance. Come over here and watch what happens when you try to get a frame out of a super that the bees have stuck together with propolis. See, we have to get a screwdriver or a hive tool under the lug and pry it out like this. The two nails ripped right out of the top bar on this old frame. If you look you'll see I didn't bother to put those last two nails where they should have gone. It just came apart. Some beekeepers use only one nail there but I have seen the top bar sort of twist at times when frames are nailed that way. Bees don't like gaps. They fill it with propolis."

"Why didn't the glue, you know, like, keep it together?" The kid's been paying attention.

"Because I didn't think I needed glue. So I didn't bother. Somewhere I read that you didn't need to glue frames or supers."

"But say you did. I mean only use glue. Would it hold? Without nails?"

"Maybe. But that's why I said it's like insurance. You may never need it, but when you do it's nice to know you've got it."

"What's that mean?"

"It means some people wear both belt and suspenders. Either alone will hold your pants up. Unless you get caught in barb wire. We'll use both glue and nails." I can see by his face that insurance, suspenders and barb wire are not high on the list of things that an eight-year-old cares much about. "Now that you have glued everything including your hands here wipe them on this old rag, not on your pants . you can put them together and fit them into the jig. And before we start to nail things together I'll show you how I drill little holes where the nails have to go. I use a drilling jig for that."

I show him how to 'choke up' on the hammer so that it works better for him. He makes the usual mistakes. Drives the nail in at a slant so that it comes out the side of the end bar. He's not too happy with that. I tell him that's alright and use the end of an old chisel to push it back out. He tries again and bends the nail. After he's done a few more frames from the discard pile he finally gets one right. Then he does three in a row, perfectly. In the end, with a little help, he has his ten perfect frames hanging in the 'superdooper.' His face glows. His blue eyes are bright.

"Look how neat my frames hang. The bees will have just the right space. Right?"

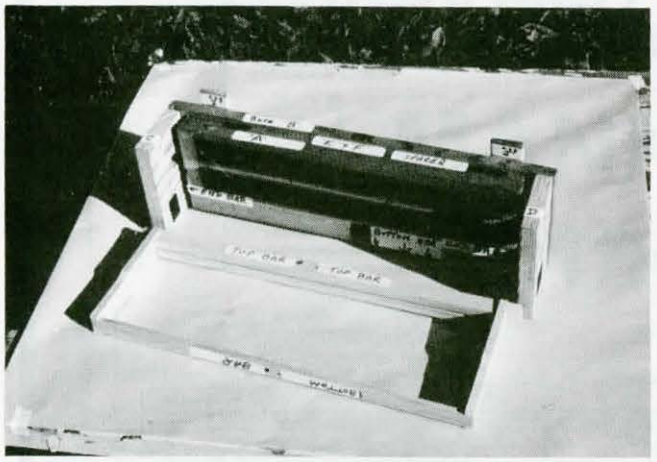
"Right! We'll make a carpenter out of you yet."

"That was fun. You think I could be a carpenter?"

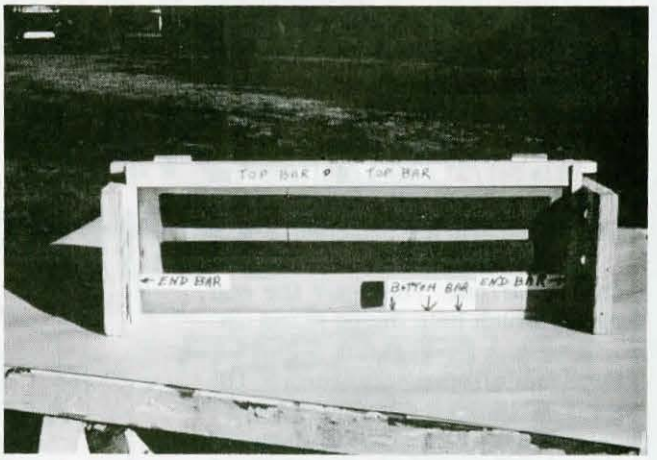
"I think you can be anything you

Continued on Page 166

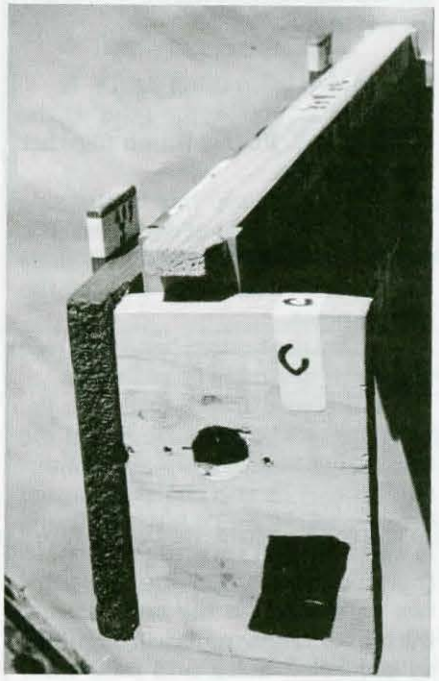
NAILING JIG



The Nailing Jig completely assembled. All parts are labeled.

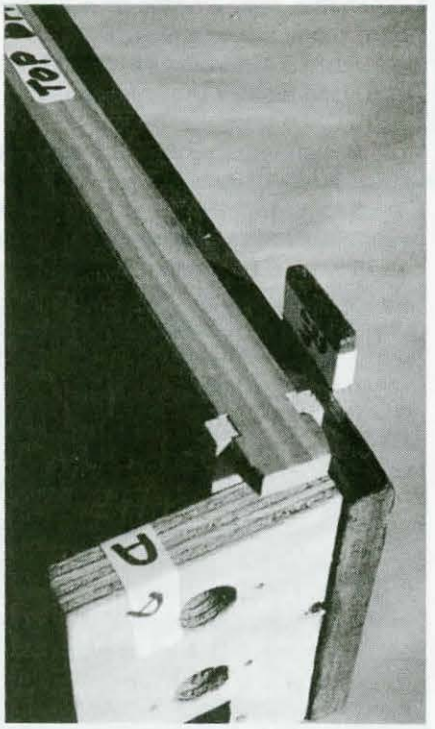


The Nailing Jig with a frame in place. Note how the frame fits around the holder and rests solidly on the surface.



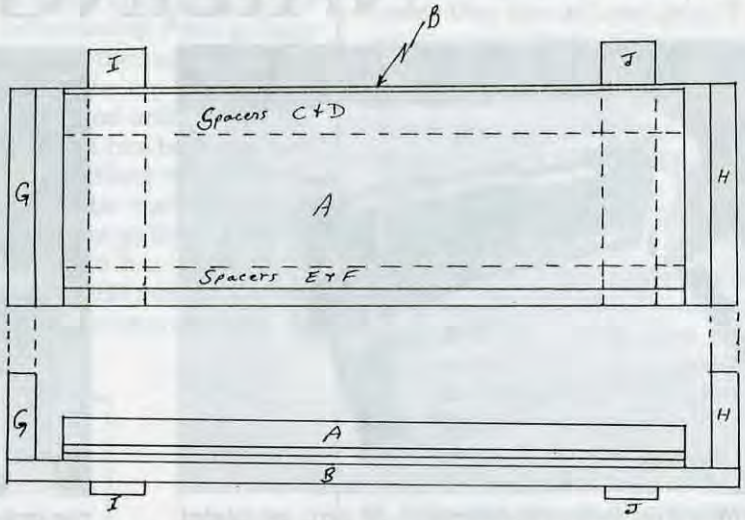
Looking at the left end of the Jig, and .

looking at the right end of the Jig (holes in C and D are from previous projects)



Attaching the bottom bar. Note how the frame fits flush with the bottom of jig. This would work equally well with split bottom bars.

MAKING THE NAILING JIG



1. Cut all pieces to size & identify them with letters A through J.

Parts made from 3/4" (19 mm) stock:

A is 5" x 17" (13cm x 43cm), cut absolutely square and fits inside your frame. If this part is square then all the frames you make with it in the future will be square.

B is 5-1/2" x 19-1/4" (13.97cm x 48.89cm). This is the base to which the other parts are attached.

C & D are 3-1/2" x 5-1/2" (8.89 cm x 13.97cm). These are the end pieces which help the jig stand up.

Parts made from pieces of lath 5/16" x 1-1/2" (8mm x 40mm)

E, F, G, and H are cut to 17" (43cm) and used as spacers mounted between A and B. These are less expensive, less trouble and lighter than using another board.

I and J cut to 6-1/4" (15.87cm) and used as legs mounted on "B"

2. Nail together E and F with all sides flush. This is the top spacer.

3. Nail together G & H with all sides flush. Get a frame bottom bar and lay its narrow dimension along this bottom spacer. Mark this position in pencil. This will give you a pencil line the length of the spacer about 5/16" (8mm) from one edge.

4. Lay A on the bench. Place the top spacer along A so that E & F are flush with A at both ends and along the top. Nail in place.

5. Place the bottom spacer along A so that G & H are flush with A at both ends – but make sure that the bottom edge of A lies along the line marked in step 3. Nail in place.

6. Find and mark the center line of these pieces which should be 8-1/2" (21.5cm) from either end.

7 Lay part B on the bench. Find and mark the center line of this piece which should be 9-5/8" (24.44cm) from either end.

8. Lay part A along part B so that the bottom spacer (G & H) lies flush along the bottom edge of B and with the centers in alignment. Nail in place.

9. Lay the edge of C along one end of B so it is flush with the top, bottom, and side of B. Tack in place so that the nail may be removed if necessary.

10. Lay edge of D along the other end of B so it is flush with the top, bottom, and side of B. Tack in place so nail may be removed if necessary.

11. Get a frame and fit its parts together. Place the frame over A. Check to see if you can get the frame out of the nailing jig. You may have to move parts C & D so you can get the frame out but don't make it too loose or the frame may just fall out. Once you have found the proper position, nail the parts in place.

12. With the frame in place, turn the assembly over so it stands on the top bar of the frame and with the bottom of B uppermost. Mark position of legs I & J on back of part B about 2" (5.08cm) in from either end of B and with the ends of I & J flush with bottom of B. Nail legs in place.

When finished, the nailing jig holds the end bars of the frame squarely with respect to the top and bottom bars; stands by itself so you have two hands free with which to nail the frame together; and leaves the top and bottom bars open, ready for nailing.

How to use the nailing jig:

1. After you apply glue to the frame parts, fit the frame together inside the jig.

2. Nail the top bar to the side bars with two nails at each end. The pre-drilled holes will hold the nails for you and ensure they go in at the proper place.

3. Nail the bottom bar to the side bars with two nails at each end.

4. Remove frame from the jig. Lay jig on its back. Place one of the frame lugs (the part that sticks out like an ear) in the channel formed between part C (or D) & B. The frame is now held in a vertical position. In this upright position you can drive two nails through the end bar into the top bar. These nails will be guided by predrilled holes and pass nails previously driven through the top bar into the end bar. Reverse frame end for end, repeat the process, and you're done. The frame is absolutely square and will give you no trouble. It can stand a ton of force!

That's all there's to it. It is all the hobbyist needs to ensure that every frame is square and well assembled.

SKWARD OFF ... Cont. From Pg. 164

want. Some great men have been carpenters. You could do worse than become one. It is hard work though."

"Tell me about it!" He wipes imaginary sweat from his brow with the back of his hand, "Whew. I'm sure tired." I can see he's had enough for today.

"Next time we'll finish the frames. We'll have to wire them "

"Wire?"

" and then put the wax foundation in the frame. "

"Foundation?"

" and after that we can embed the wax "

"Embed?"

"And that's where you should be pretty soon, I think, by the looks of you. In bed. Here comes your dad, anyway."

"I got to go. See you later, alligator "

"After a while, crocodile!" I holler after him as he dashes out the door. It's a game I taught him. Something we used to say a long time ago. I guess I'm the only one who understands it now.

HOME HARMONY

ann harman

Something Different With Bread!

Let's do something different with bread! Before you get out the loaf pans, let's consider some new shapes with bread. Yeast bread dough is very pliable and the nicest part is that your sculpture is good to eat. In case you are wondering why anyone would want to make a bread sculpture, here are a few reasons: for a birthday breakfast, for a centerpiece, for a potluck, for a gift, and just for fun.

Golden Sculpture Dough

Before you begin: The amount given here is for a large (about two-pound) loaf. In deciding on your design, choose a shape that you can put together with simple shapes — ropes, rounds, ovals and oblongs of dough. Keep the shape bold, the detail simple. If you decide on a large shape, you can easily fix a cooking pan for it by overlapping two rimless cookie sheets, adjusting them to fit your oven and leaving a one-inch space all around for heat circulation. Wrap the overlapping sheets with foil to hold them together.

Draw a full-size pattern on a sheet of paper to see how it will fit on the cookie sheets. You can use raisins or nuts for eyes or other decorations if you wish.

1 package dry yeast
1/4 cup warn water
3/4 cup butter or margarine at room temperature
1/2 cup honey
1/3 cup warm milk
1/2 teaspoon salt
5 eggs
5 to 5-1/2 cups flour
1 egg beaten with 1 tablespoon water

In a large bowl dissolve yeast in the warm water. Stir in butter, honey, milk, salt and eggs until thoroughly blended. Gradually beat in about 4-3/4 cups of the flour to make a stiff dough. Do not knead. Cover and let dough rise until doubled (about 1-1/2 hours).

Punch down to release air; then knead on a lightly floured board until smooth and satiny (10 to 20 minutes), adding flour as needed to prevent sticking.

Divide dough into portions to fit your design, saving a small piece for decorative detail. Create your sculpture on the greased baking sheets (see introductory paragraph).

For a solid area, shape dough into a ball and place smooth side up on the foil, then pat or roll out to achieve the shape you wish. Make no thicker than about one inch or bread may crack during baking. Because dough expands as it rises and bakes, keep shapes about half as plump as you want them to be in the end.

Butt pieces of dough close together if they are to be joined (such as arms and legs on a teddy bear). Leave at least 2 inches of space between parts you don't want to join. To attach small details, such as eyes, shape them into teardrops and set, points down, into holes poked into background dough. To create surface detail, such as a mermaid's scales, or to separate areas like fingers or feathers, snip dough with scissors. Roll pieces of dough between your hands to makes strands for arms, legs, or hair — try twisting, curling or braiding strands.

Cover sculpture lightly and let rise in a warm place until puffy (about 30 minutes). Brush gently with egg mixture.

Bake in a 350° oven for about 30 minutes or until bread is richly browned and sounds hollow when tapped. Let cool on pan for 10 minutes, then slip a spatula beneath loaf and gently slide onto rack to cool completely.

Sunset Cookbook Of Breads

The next time you bake bread, particularly a round loaf, you can decorate it for some special occasion. Pinch off a small portion of the bread dough and roll it fairly thin. Select some cookie cutters in star, heart, flower or crescent shapes. Dip the cutters in flour then cut shapes from the bread dough. You can make freehand shapes with a sharp paring knife if you wish or cut out letters to make a name. Lay these very close together on the top of the loaf and press down lightly so the shapes will stick. Put the shapes on the loaf before the last rising. The shapes need to be put close together because as the bread rises both before and during baking the shapes will spread apart. If the shapes start to get too brown, cover the loaf loosely with a foil tent.

Kulich

Easter will be here soon and many traditional breads are baked in different countries as a part of festival meals. We are used to Hot Cross Buns for Good Friday. This year let's try an unusual Russian Easter bread. This recipe makes a very large loaf, perfect if you're celebrating with family and friends.

Find a tall round casserole or container; a three-pound coffee can is ideal. This rich, cake-like bread will rise above the top of the can to make a very impressive loaf.

1-1/2 tablespoons dry yeast (1-1/2 packets)
1/4 cup warm water
1/2 teaspoon honey
1 cup cream
2/3 cup honey
1 teaspoon salt
6 tablespoons sweet butter (3/4 stick)
1 teaspoon vanilla
2 tablespoons brandy or 2 more teaspoons vanilla
5 eggs, separated and at room temperature
1/4 teaspoon cream of tartar
6-7 cups unbleached white flour
1 egg plus 2 tablespoons cream or milk for glaze

In a large mixing bowl combine yeast, warm water and the 1/2 teaspoon honey. Scald the cream. Stir in honey, butter and salt. Cool to lukewarm.

When yeast mixture is bubbly add the cooled cream mixture, vanilla and brandy. Beat to mix. Add egg yolks one at a time, beating well after each. Add 2 cups of flour and beat 2 minutes with an electric mixer.

In a separate bowl beat the egg whites with cream of tartar until they hold stiff

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HOME ... Cont. From Pg. 169

peaks but are still glossy (not dry). Gently fold them into the batter. They don't have to be completely mixed in. Cover bowl and set in a warm place for an hour or so until the mixture has risen and is spongy. Stir the sponge down and add enough flour to make a dough that holds together.

Turn dough out on a floured board. Knead until smooth and elastic, adding as little flour as necessary for a soft, tender dough. Place the dough in a buttered bowl, turn to coat all sides, cover with a towel and let rise until double in bulk.

Punch dough down, turn out onto a lightly floured board, knead a few times to press out air bubbles, cover and let rest about 10 minutes.

Preheat oven to 350° Butter a tall round casserole or a 3-pound coffee can. Form the dough into a round ball to fit container. It should fill container about 1/2 full. Brush the top with melted butter, cover and let rise until almost doubled in size. Bake about 45 minutes. Remove and brush with glaze. *To make glaze:* Beat the egg with the 2 tablespoons cream or milk.

Return to oven and bake another 15 minutes. It's hazardous to take this bread out of the pan to test for doneness. Try inserting a cake tester or broom straw into the center. It should come out easily and clean.

Let the kulich sit in its pan for a few minutes before attempting to remove it. Then turn the pan on its side and carefully slide the bread out. Turn loaf upright to cool on rack. If the bread is not quite as crusty on the sides as you like, just slide it back into the pan and bake for a few more minutes longer.

The Garden Way Bread Book

Golden Beehive Bread

And now beekeepers — we are going to make a beehive. Only this will be an edible, bread skep. If you have some of those little fuzzy bees you can use them for decoration. This bread skep will make a grand centerpiece — invite your guests to break pieces off.

1 package yeast
1/4 cup warm water
1/2 cup (1/4 pound) butter or margarine at room temperature
1/2 cup honey
1 tablespoon grated lemon peel
1/3 cup warm milk
1/2 teaspoon salt
5 eggs
5-1/2 to 6 cups flour
1 egg beaten with 1 tablespoon milk

In a large bowl, add yeast to water. Let stand about 5 minutes. Stir in butter, honey, lemon peel, milk, salt and eggs until blended. Gradually beat in 5 cups of the flour. Then turn onto a floured board and knead, adding more flour as required until dough is smooth and elastic. Turn over in a greased bowl, cover with plastic wrap and let rise in a warm place until doubled.

Punch dough down, then knead briefly on a floured board to release air. Return to greased bowl, turn dough over to coat, cover with plastic wrap. Chill 1 to 24 hours.

Now to construct the beehive. Wrap the outside of a 2 to 2-1/2 quart ovenproof glass or metal mixing bowl, about 9 inches in diameter and 4 inches deep, with foil, folding excess inside. Grease foil generously and invert bowl on a greased 12- by 15- inch baking sheet.

Punch dough down and knead briefly on a floured board. Divide dough into 20 equal pieces. Working with 1 or 2 pieces at a time — keep remaining dough covered and chilled — roll each portion into a rope about 3/8 inch thick and 18 to 20 inches long. Pinch ends of two ropes together and twist. Starting at bowl rim (the rim is sitting on the baking sheet), wrap twist around bowl. When adding a new twist, pinch ends together to join them. Keep bowl in refrigerator to prevent uneven rising as you roll ropes. With a 2-1/2 quart bowl, you may not quite cover the entire bowl. You might have a small opening at the top. If you have extra dough you can shape into small rolls and bake separately.

Cover shaped dough loosely with plastic wrap and let rise in a warm place until puffy, about 20 to 30 minutes. Gently brush with the egg and milk mixture.

Bake in a 350° oven until well browned, about 25 to 30 minutes. Let cool on the bowl on a rack for about 10 minutes. Crumple a large piece of foil into a loose ball of the same diameter as the depth of the bowl. Set foil ball in the center of a rack. Gently remove bread from the baking bowl, using a small spatula if needed to free bread. Set bread over foil ball so that it supports top of hive until bread is almost cool. If you are going to transport the beehive, let it cool completely.

Sunset Entertaining For All Seasons

Now that you know how to manipulate bread and make some very nice sculptures, continue to have fun with yeast breads. Let me know about your creations and critters.

INNER ... Cont. From Pg. 128

to deal with the individual bureaucracies of each of these very different countries, he speaks seven languages and is a pretty sharp businessman. Not a bad combination.

APICOM's catalog already lists items like foundation machines, stainless storage tanks, extractors, filling machines, glass and plastic jars, pollen collection and processing equipment, queen rearing equipment, woodenware, queens and bees, A.I. equipment and much more.

Much, (but certainly not all) of his imported equipment is less expensive than similar equipment produced in the U.S. Or, it is less expensive to import through his company because of the economy of scale. Thus, for U.S. beekeepers perhaps a better way to do business has opened up. To reduce costs U.S. beekeepers need supplies that are less expensive but are equal in quality to what they can get here. So to compete with the low prices of imported honey, we may very well soon be using imported equipment. And therein lies the incredible irony of this situation. It would be unfortunate if the only way the producers of honey can compete is to copy the sellers of honey – by buying cheaper imports. On the other hand, the dramatic influx of cheaper honey imports have done two remarkable things; first - honey producers have become more efficient, leaner and meaner if you will; and second, they introduced us to the real world of global agriculture, and that Global Market has just placed one more foot in our door.

To find out more about APICOM write them at 520 West 112th Street, Suite 9A-9, New York, NY 10025-1604. Or call during regular business hours 212-662-2820. Bob will be glad to help.

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All last winter a small group of people spent their days and nights talking to almond growers and beekeepers, orchestrating the greatest pollination event in the history of agriculture.

These colony brokers contact or are contacted by growers and beekeepers alike – growers need bees and beekeepers need the business. From a grower's point of view, especially those who need thousands of colonies, working with a broker is the easiest way to go. They need only work with a single contact and can be assured enough colonies, at the right strength delivered on time. Beekeepers, too, benefit from this arrangement. Rather than run all over almond country looking for work, they simply contract with a broker and get their assignment.

It's never that simple though. Growers don't pay, sometimes. They violate pesticide or other regulations, sometimes. But beekeepers don't deliver as many bees as promised, sometimes. And, occasionally those colonies aren't as strong as they should be.

I know a few brokers. They offer insights into this industry available nowhere else. I don't know if it's coincidental or not, but all the brokers I know have gray hair. In early February some even develop nervous twitches. It goes with the job I'm told. Some job.

There are many growers and beekeepers who don't use brokers, of course. They negotiate these floral relations directly. And although the broker business isn't new, it is becoming larger, more refined and covering more crops each year. What that means is, in case you haven't figured it out, is that bees have become a commodity. Like pork bellies or soybeans.

Savvy brokers and growers aren't buying just colonies anymore either. They're paying strictly for frames of bees and brood. They put the required number of those 'units' on a crop. Not colonies/acres – but frames/crop. The process is definitely becoming not only a science, but a well run business.

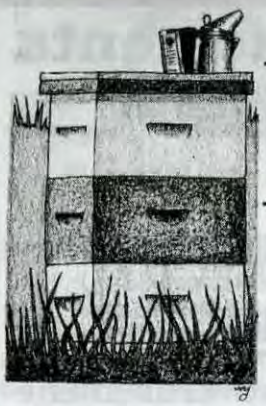
The parallels between this and the honey business can't be ignored. With honey there are producers, producer/packers, packers and handlers. With pollination there are now (bee) producers only, producer/pollinators, pollinators and brokers.

This refinement has been fueled to some degree because the honey business has become if not less profitable, certainly less predictable. But the driving force has come from outside the beekeeping group. It has become a sellers market. There are fewer pollinators (especially the mid-size operations), there are fewer wild honey bees (mites, etc.), there are fewer other bees out there pollinating for free, and more growers are (finally!) beginning to place a value on a colony of bees in their orchards or fields.

The advantages are clear. Niche market honey sellers should begin to prosper (local honey!); midsize operations with foresight and guts will branch out or expand their pollinating business; and large outfits should now see the value of their bees as not just honey makers, but the more universal commodity they have become.

The Chicago Board of Trade would be proud.

Kim Flottum



BEE TALK

richard taylor

"Fancy equipment doesn't make a good beekeeper."

Let's talk about apiary equipment. And let's begin with the most controversial piece of equipment of all – the queen excluder.

To say opinions on this vary is an understatement. Many beekeepers feel very strongly one way or the other. They are called "honey excluders" by some, who claim that the bees would prefer not to go into the supers to store honey rather than squeeze through an excluder. Others deem them indispensable.

Now there is no point in just declaring, one way or another, whether they should be used. The thing to do is understand something about the manner in which bees store honey, and then see that, yes, sometimes a queen excluder is useful, while under different conditions or systems of management it is not.

Bees living in a natural cavity, such as a hollow tree, have a definite pattern of arranging things. Honey always is stored above and around the upper edges, so as to 'cap over' whatever lies below it. Along the bottom edges of this cap of honey, pollen is stored. Sometimes, after one or more heavy nectar flows, the cap of honey can be very large and deep, whereas in early spring, when winter stores have been largely consumed, it is thin and sparse, sometimes disappearing entirely, bringing the colony to the brink of starvation.

Similarly, the pattern of pollen varies. But it is invariably stored *beneath* the honey cap, which extends over the top of the colony and, usually, down the sides, in the outermost combs. Sometimes there is rather little pollen, scattered roughly along the bottom edge of the honey cap, while at other times – in early summer, for example, following a period of an abundance of pollen in the fields – there will be lots and lots of it. Sometimes a comb will be fairly filled with pollen. But note – such a pollen-filled comb is never in the center of the colony. It is always towards the outside. But it is rarely one of the outermost combs. Those are more likely filled with honey.

And how does all this bear on the question of queen excluders? Here is how – honey is *itself* a queen excluder, a natural queen excluder. That is, the queen never crosses up over that cap of honey to lay eggs above it. The actual brood nest is always underneath the honey and the pollen. And this means that *if* there is a goodly supply of honey in the hive when the first supers are added, then you do not need an excluder. You already have one – the honey itself works as an excluder.

If, on the other hand, you go putting supers on a colony that has pretty much consumed its stores, so that, for example, some of the combs in the top and center of the hive have little honey in them, then the bees are almost sure to store pollen up in the supers, and are very likely to raise brood up there too.

Thus, those who overwinter in two-story hives, then go out and pile one or more supers on them early in the season, are likely to get pollen and brood in those supers. What has happened is that the bees, in early spring, moved their colony and brood nest up into the second story, as winter stores there got consumed. And there being no natural queen excluder – that is, honey cap – above their brood nest, the queen went right up into the supers.

I never use queen excluders, because I never need them. My bees go into winter with more than sufficient stores of honey, gathered from late summer and early autumn sources. And, I never feed them sugar syrup. So, come spring, there is still honey over the brood nest, in all the combs, including the center ones, and I super right up. I never find brood in the supers, nor do I ever find pollen. I should add that all my hives are devoted to comb honey production so this system works very well. The late nectar is seldom good for making comb honey anyway. It is better to use it for winter stores, and come spring, as a natural queen excluder.

I hope those remarks will settle the queen excluder controversy once and for all. To the question, whether or not to use queen excluders, the answer is – it all depends. Depends, that is, on the factors just described.

How about other odds and ends? The slotted (or slatted, as it sometimes called) bottom rack, for instance? The idea behind this is to improve ventilation in the hive, relieve congestion and so on. But I think it is a waste of time. It is an extra piece of equipment and, what makes it worse, you need a deep bottom board under the slotted rack. Many years ago I made up a bunch of these slotted racks, and a few of them are still in the hives, but I have never noticed the slightest advantage to them.

The same goes for follower boards. These are pieces of thin wood, maybe a quarter-inch thick, shaped like a

Continued on Next Page

BEE TALK ... Cont. From Pg. 173

frame; that is, thin sheets of wood that can be hung in a hive like a frame. You put one of these at each side of the hive, then have nine regular combs between them. I have no idea why they are called follower boards. "Dummy combs" would be more apt.

The idea behind these is that, since the queen rarely lays eggs in the outermost combs, then you might as well use follower boards there, and then you will get *nine* combs of brood, rather than only eight. (Think about this a minute, and you will figure it out.)

Years ago I made up a lot of these, and every once in awhile I still come across one or two of them in a hive, serving no purpose whatsoever. Lots of them are just piled up off to the side of the apiaries, rotting. And that gives you a pretty good idea of how valuable I found them to be.

Now, if you want to be a good beekeeper, and get nice crops of honey, just forget about special equipment. Follow this simple principle: use standard equipment, take the standard precautions against mites and foulbrood, and (most important of all) try to keep your colonies *strong* the year round, especially in spring. The secret to getting lots of honey is *lots of bees*, not lots of fancy apiary equipment.

QUESTIONS? ANSWERS!

Bad Bumble Bees?

Q. Last summer I had a problem with bumble bees – not the big ones, but about the size of a honey bee. They would try to get into the hives and my bees would gang up on them, stinging them to death. But it took about 20 honey bees to attack one bumble bee, and all wound up dead. This went on all summer, with the result that there were hundreds of dead bumble bees but thousands of dead honey bees. I didn't get any honey from these hives. When I checked them in the fall I found a type of paper bees nest, like the ones hornets build, about the size of a golf ball, between the frames. How can I avoid this problem next year?

Doug Wallman
Roscommon, MI

A. This is about the strangest thing I have heard of in over 50 years of beekeeping. I have never seen anything like this, and the experts I have checked with are equally baffled. Any readers who can shed light on this are urged to do so.

Yellow Jackets 1, Honey Bees 0

Q. Last fall I lost about a quarter of my hives – five in all – to yellow jackets. At the entrances were loads of dead bees and yellow jackets. This had never happened to me before. I will revive these with package bees in the spring. Should the hives be kept as two-story hives, or reduced?

J.O. McBratney
New Bedford, MA

A. I have been receiving many reports of honey bee colonies being attacked and destroyed by yellow jackets or, in one case, small bumble bees, and have finally concluded the following: a colony becomes infested by mites, very likely tracheal mites, and as it becomes weaker and weaker these other insects begin to clean it out. The beekeeper sees yellow jackets – or whatever – invading the hive and concludes that these are the problem, whereas, I have concluded, they are only seizing upon the opportunity provided by a weakened and increasingly defenseless colony.

Editor's Note: Weakened colonies can be easy targets for yellow jackets, who eat adults, larva and even honey. Finding and destroying nearby nests may help. Bumble bees, however, like honey bees, are vegetarians and are probably only looking for a place to live. Cleaning out that nest would have solved the problem.

Crystalized Honey

Q. I didn't get all my supers extracted last year and they crystallized. I set some out in the yard and the bees cleared them but only with much fighting and loss of bees. Is there a better way? Could I put them back on the hives over inner covers, for example?

Kate Henderson
Walton, NY

A. The best way to get granulated honey cleared out of supers, in my experience, is to return them to the bees, *under* the brood chamber, that is, right on the bottom board. The bees want their honey above the brood nest, not under it, so they move it up. In early spring those supers, which will probably have no brood in them, can be restored to normal use.

Besides Mowing . . .

Q. What's the best way to keep grass down in front of the hive?

Pat Morris
Newfield, NY

A. The best way is to get your hives up off the ground far enough that grass is not a serious obstruction. Herbicides that are still legal have become too expensive to use. Old carpet, shingles or other such devices also work, and can be gotten free if you look around a bit.

Horse Chestnuts

Q. I have a few horse chestnut trees near my hives. Are these a good honey source?

Tim Grove
Covert, NY

A. I have had horse chestnut trees near my apiaries, too, but I have never seen any bees on the blooms, which is too bad, because the bloom is spectacular.

Treating For AFB

Q. If a colony is treated for American foulbrood with Terramycin in the fall, will it need to be treated again in the spring?

Henry L. Yoder
Flemingsburg, KY

A. Yes, definitely. Since the antibiotic's effect is upon the feeding larvae, then it is more important to apply this preventive measure in the spring, when brood rearing is at a peak, than in the fall.

Questions are welcomed. Address: Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing stamped envelope for reply.

Richard Taylor

?Do You Know Answers?

1. **False** Honeydew contains glucose and fructose, as does honey but these two sugars are present in honeydew in smaller quantities. Honeydew is also darker in color, higher in pH, ash and nitrogen and contains melezitose. The sugars of stored honeydew are even more complex than those of honey.

2. **False** Fermentation normally begins at or near the upper surface of the honey container, so the sample needs to be taken at the top rather than the bottom of the container. Granulation on the other hand begins at the bottom of the container.

3. **False** The tendency and extent of crystallization is related to the sugar composition of honey, its moisture content and the temperature. Honeys high in glucose crystallize rapidly; those high in fructose granulate very slowly or possibly not at all.

4. **True** The chemical composition of honey from a single flower source will be similar regardless of the geographical area of production. While the moisture content will vary from one region to another in relation to relative humidity, the nectar sugar composition will be similar.

5. **True** Moisture content is one of the most important characteristics of honey since it influences keeping quality (fermentation), granulation and density (weight). Low-moisture honeys granulate more slowly than high-moisture honeys and have a lower probability of fermentation. The variation of density with moisture content is sufficiently large that a low-moisture honey will tend to layer under a higher-moisture honey unless special care is taken to mix them.

6. **True** The predominant acid in honey is gluconic acid which is derived from glucose. The gluconic acid originates largely from the activity of the glucose oxidase which the bee adds at ripening. The acid contributes to the stability of the ripening nectar against fermentation.

7. **False** The enzymes in honey are almost totally added by the bee, though some traces of plant enzymes derived from the nectar may be present.

8. **True** Honeys change in color, becoming darker if heated too much or for too long a period of time. A similar change in color also occurs with honey in storage, only at a slower rate. This color change can be avoided by storing honey at low temperatures (freezing).

9. **False** The Pfund grader is used to determine the color classes of honey, not measure the pH.

10. **True** Light-colored honeys are generally milder in flavor and have a lower mineral content.

11. **True** The viscosity of honey is simply its resistance to flow. A heavy-bodied honey has a high viscosity and flows slowly. The viscosity of honey is related to the moisture content, temperature and protein content. The viscosity of honey is reduced by heating which greatly facilitates extraction, straining, settling, flow through pipes and emptying of containers.

12. **True** There is a relationship between the moisture content of honey, yeast count and fermentation. Honey with less than 17.1% moisture will not ferment regardless of the yeast count.

13. **False** Honey has been shown to contain small and variable amounts of at least six vitamins. The very low amounts of these materials found in honey have no real nutritional significance.

14. C) Fructose (Levulose)
15. B) Sucrose
16. B) Sucrose
17 A) Glucose (Dextrose)
18. C) Fructose (Levulose)
19. B) Carbon Dioxide
20. E) Yeasts
21. B. 3.9
22. C) 95%
23. Section comb honey
    Cut comb honey
    Chunk honey

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

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

Gleanings

MARCH, 1994 • ALL THE NEWS THAT FITS

IBRA JOURNAL WINS GOLD

Andrew Matheson

The UK based International Bee Research Association (IBRA) has struck gold with its scientific quarterly, the *Journal of Apicultural Research.* The high standard of this periodical was recognized at the 33rd International Apicultural Congress, held in Beijing in September.

From all the entries submitted in the journals competition, and of all the medals awarded, the *Journal of Apicultural Research* was selected to receive the gold medal.

Significant changes made to this periodical in the past two years have improved its content and appearance, and the speed with which new research findings are communicated to scientists and beekeepers.

"This is the only international competition of its kind," according to Andrew Matheson, Director of IBRA, "so we can confidently say that not only is the *Journal of Apicultural Research* the best in the world, but that it is recognized as such by others."

"I am grateful to those who participate in producing this journal: the editorial team at IBRA headquarters, and editors in Baton Rouge, USA, headed by Dr. Thomas Rinderer, senior editor. We rely on an international panel of referees and the authors who contribute manuscripts."

But Has No Inspection Program

WASHINGTON STATE NEEDS POLLINATION/HONEY BEES

Washington State fruit growers will be asked to pay a 50-cent surcharge on bee colonies that they rent this spring to help fund Washington's apiary program, which has been cut from the WA State Dept. of Agriculture's budget.

The program, headed by Jim Bach, did colony inspections to determine the quality of hives rented out to farmers and to assess infestations by tracheal and *Varroa* mites, which have been devastating the bee industry in recent years. It also ran educational programs for the state's beekeepers.

The mites are parasites that kill the bees. Washington's 1,130 beekeepers estimate they lost $1.3 million in 1992. As a result of the losses, a Honey Bee Preservation Committee was formed in an attempt to find ways to revitalize the industry so it could continue to provide quality colonies for crop pollination.

Then, during the 1993 legislative session, the apiary program was cut out of the Department of Agriculture's budget. The program had cost $124,000 for the last biennium.

A funding committee made up of three members of the Washington State Horticultural Association and four beekeepers, is proposing to raise $85,000 a year to keep the apiary program running and enable it to respond to beekeepers' needs. This would be achieved through a registration fee on all Washington and nonresident beekeepers, a pollination surcharge of 50 cents, which will be collected by the beekeepers, will apply to all hives placed to pollinate agricultural crops.

George Allan, president of the Washington State Horticultural Association, said the tree-fruit industry is supporting the proposal because of the importance of having a good, strong bee program to ensure pollination of crops. "We don't operate if we don't have bees," he said.

Pollination fees are not considered a major factor in growing costs. The average cost in Washington is $30 per colony per placement. Bach has calculated that pollination costs amount to .0037 cents per box for apples. It takes about 110,000 colonies to pollinate the state's crops. Apples account for 83% of the pollinated crops.

From Good Grower Magazine

Great Gatt-sby

WHAT HAPPENS NOW

Now that it looks as if the worldwide General Agreement on Tariffs and Trade (GATT) will actually pass, who in agriculture really wins?

In the long run, the whole world will profit from lower food costs and a wider assortment of goods and services, says Luther Tweeten ag trade expert at Ohio State University. But in the short run, the gains may not be as great as expected he says.

The reason is that the United States and Europe have already settled much of their war over farm price supports outside the GATT. Earlier unilateral actions cut supports by about half in the United States and about one-third in the European Union. The GATT would only bring 20% cuts, so the gains were already made, Tweeten says.

As a result, the GATT signing will not generate the $1.5 billion annual gains in agricultural trade that many have been predicting, Tweeten says. The actual figure could be as low as $400 million, according to some analysts. That's modest in a $42.5 billion U.S. farm-export market.

"The GATT is positive from the standpoint of world trade in all goods and service," he adds. "That's what we've been saying all along. But the gains for U.S. agriculture certainly aren't what most would have like to have seen. That's because earlier negotiations took some of the wind out of those trade sails."

Tweeten is referring to the Blair House Oil Seed Agreement between the United States and the European Union, and the MacSherry Reforms already committed to by the Europeans. Those policies may have been pushed through under the shadow of the GATT legislation. Since Europe and the U.S. were the two regions with the most farm trade problems, the earlier agreements effectively cut the immediate impact of GATT on world agricultural trade.

So which parts of U.S. agriculture actually win and lose? Here's what analysts believe the outcome of the GATT will be:

•U.S. wheat will be hurt. The GATT commits the United States to reduce its Export Enhancement Program supports by about 30%. The Europeans face a similar cut, but that doesn't raise U.S. exports enough to offset the loss of the EEP.

•GATT should bring significant gains for U.S. producers of feed grains, rice, pork and broilers. Feed grains are the biggest gainers and corn prices alone are likely to go up five percent. The flip side is that these increases will drive up feed costs and hurt livestock production, he says.

• The CAIRNS group of nations is likely the biggest gainer from the agricultural portion of the GATT. New Zealand, Canada, Argentina and Australia will benefit most from the GATT, while Brazil, Chile, Columbia, Hungary, Indonesia, Malaysia, The Philippines, Thailand and Uruguay – will go along for the ride.

• Soybeans producers lose because the Europeans will drop supports to meat production, cutting demand for soybean meal.

• The dairy industry will take a few lumps from freer trade. Dairy products from abroad will be able to compete in the United States with less restrictive quotas which will later be replaced by tariffs.

MISSISSIPPI WANTS DATA

"The MS Beekeepers' Assn. is seeking data to support a Section 24(c) or Section 18 label for the use of liquid amitraz in bee colonies. Anyone who has conducted a scientifically sound efficacy or residue study using amitraz, send results and study protocol to Harry Fulton, Bureau of Plant Industry, P.O. Box 5207, Miss. St., MS 39762."

VA CLUB RECEIVES BONUS

James Skinner has been awarded the Tidewater Beekeepers Association's "Black Smoker Award" for his behind the scenes work in convincing the heirs of a prominent out of town beekeeper to donate his entire inventory of bees, equipment and suppliers to the Tidewater Club.

The Black Smoker Award was originated by the Tidewater Beekeepers to honor a member who has worked hard during the past year to the benefit of the club as a whole.

The smoker is a very useful tool in beekeeping, and the more it is used, the blacker it becomes. Hence the significance of this award's name. The member of this local club who has been the most useful during the past year is selected for presentation at the club's annual Christmas Dinner meeting.

Most beekeepers are finding they are the end of the line in their families to keep bees. So when this long time Virginia beekeeper passed away, his remaining family members had no interest in bees and did not know quite what to do with all his "stuff." Mr. Skinner convinced the heirs to donate everything to the Tidewater Beekeepers, located in Southeast Virginia. An inventory of the several truck loads gave an estimated total value approaching $10,000. This arrangement appealed to both the club and to the heir's tax accountant. Art Halstead presented the award.

Other clubs may with to pursue this method of having members will their beekeeping supplies to their club as a tax benefit to surviving heirs.

WI GROUP MAKES DONATION

Members of the Columbia/Sauk County Honey Producers' Association will make life in a biology laboratory at the University of WI Center-Baraboo/Sauk County a little sweeter. The organization donated $500 to assist the campus in purchasing a video display system for microscopy.

Biology faculty ordinarily set up specimens under the microscope and students can then view the selected material, one student at a time. The new video system allows faculty members to display specimens on a 25" television monitor so an entire class can see the material at the same time. The advantages of the system are many and include increasing the number of specimens that can be shown while decreasing the time it takes for students to view the material. The video system also allows the instructor to use various microscopes or the camera's own lens depending on which can provide the best view of the object.

The check was presented by Augie Laechelt, president of the association. Larry Phelps, associate professor of biology, accepted the check and thanked the Honey Producers Association, of which he is a member.

"This will be very useful in teaching all our classes as well as demonstrating things to groups such as the honey producers," he said. "Also, it should be very helpful for students who may have difficulty using normal microscopes."

HONEY BOARD 800

Beekeepers, importers and other honey industry members can now telephone the National Honey Board toll-free! You can "buzz" the Honey Board at 1-800-553-7162.

"A toll-free number will give the industry easy access to the Honey Board," explained Sherry Jennings, industry relations director for the National Honey Board. "The number can be used to place orders for promotional materials, to request marketing information or to express views and ask questions about Honey Board programs."

MORSE AWARDED DUTCH GOLD BEAR

On January 14th, at the American Honey Producers Association's Annual Meeting in Tucson, Arizona, the recipient of the 1994 Dutch Gold Honey Bear was announced. This year's recipient is Dr. Roger Morse, the well-known researcher, teacher, extension agent and writer from Cornell University.

The Dutch Gold Honey Bear is awarded each year to an individual who has made significant contributions to the beekeeping industry. The award is in honor of Luella and Ralph Gamber, the founders of Dutch Gold Honey, Inc. The bronze honey bear on a walnut base, is a replica of the original model created by Woodrow Miller and W. Ralph Gamber in 1957. A $1,000.00 research grant in honor of Dr. Morse was also presented to the university of his choice to further bee research.

The son of a beekeeper and writer, Roger Morse was born in Saugerties, New York in 1927 and was exposed to the beekeeping industry throughout his youth. He attended Cornell University and completed his B.S., M.S., and PhD by 1955. After a brief stint as State Apiculturist in Florida and Massachusetts, Dr. Morse returned to Cornell as Associate Professor of Apiculture.

While studying at Cornell, Roger was fortunate to have Dr. E.J. Dyce as his mentor. Dr. Dyce is famous for the 1931 patent for creamed honey and was honored by Cornell for his contribution to the apiculture department with the naming of the bee lab in his honor.

Dr. Morse has graciously shared his experiences with the industry via a long list of published materials that includes, 'The Illustrated Encyclopedia of Beekeeping', 'A Year In The Beeyard', 'Making Mead', 'Honey Bee Pests, Predators and Diseases', 'Bees and Beekeeping', 'The Complete Guide To Beekeeping', and most recently as the Editor of 'The ABC & XYZ of Beekeeping' In addition, he serves as Research Editor for *Bee Culture* and thousands of readers look forward to his columns. Roger's first contribution to this magazine was in 1946.

The beekeeping industry is very fortunate to have caught the attention of a young Roger Morse many years ago. His lifelong dedication to our industry has benefited us all and we salute his accomplishments.

HONEY HELPS COLON

The medicinal power of honey has just received another endorsement – this time from researchers at the American Health Foundation in Valhalla, New York, who found that the sweet stuff may help prevent colon cancer.

Scientists at the AHF dosed laboratory rats with the chemical components of honey, along with a chemical known to cause colon cancer. They found that the honey components inhibited the changes colon cells normally go through before becoming cancerous.

The inhibitor, say researchers, is actually a mixture of honey and propolis, a tree resin that bees gather to glue their hives together. The bee cement seeps into the honey, producing what researchers say is a winning combo. Honey is already a known antifungal, anti-bacterial and anti-flammatory agent.

From First Magazine

OK B.O.Y. M.J. BRAGG

M.J. Bragg and wife Dorothy

Albert Lincoln was a dedicated beekeeper for several years of his life. After his death, the Oklahoma beekeepers association named an award in his honor. Each year the association honors and presents a plaque to the beekeeper of the year.

At the fall meeting of the Oklahoma Beekeepers' Association held in Oklahoma City, OK, on October 16, 1993, The Albert Lincoln was bestowed upon Mr. M.J. Bragg.

Mr. Bragg began beekeeping with his father at the age of 12.

He chartered the Red River Beekeepers' Association and was their President for several years. He has also served as the secretary to the Oklahoma Beekeepers' Association.

Mr. Bragg married Mrs. Dorothy Brister of Caddo, OK. They combine their beehives and now operate a large beekeeping business. They also lecture at schools and promote honey at local flea markets and fairs, at each chance they get.

PA QUEEN

Melissa Swartz was recently crowned as PA Honey Queen for 1994 in Lewisburg.

Her parents own Swartz's Apiaries in Shoemakersville, PA, also in Trilby, FL.

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Problem Solved

ralph harrison

When you live in a city and keep bees it can be a real challenge at times. You have to take into account the bees' flight path so they do not interfere with your neighbor's activities. You have to supply them with a source of water so they are not in your neighbor's pool and, if you have a small yard, you have to decide how much of it you are willing to lose to your hobby.

My yard tapers from 80' x 175' to 75' x 80' at the back. When I started out with one hive this was no problem. It was over in the corner with the flight path kept over the roof of our house.

In both my second and third year of beekeeping I added a hive hoping my wife wouldn't notice. (She did, but her objections were minor at this point.)

The trouble all began the following year with the addition of the fourth hive and the potential loss of another section of yard to my hobby.

My yard backs on to a large tidal marsh at the lower end of the Housatonic River in Connecticut. I had thought to myself, "If I could put the bees out in the marsh it would move them far enough away and my wife would have full use of the yard again."

The problem with putting the bees there though is that because it is a tidal marsh the water level fluctuates with the rise and fall of the tide. During a full moon the water can be as high as three feet above normal and during coastal storms and hurricanes the water can rise eight to 12 feet above normal.

The only way I could put the hives in the marsh would be to put them on some kind of float. I do have a small skiff tied to a float at the end of a dock in the creek, and with this as a design starting point, I began to plan my "bee float."

With some luck I was able to come by some pressure-treated lumber. It had once been someone's deck that had been washed up on the shore and not claimed after a big winter "nor'easter" that had hit the coast with much fury and damage last year.

Through a conversation at work I heard about a company that had some 4' x 8' sheets of styrofoam that had been used for packaging large machinery. Now they were looking for a way to get rid of the sheets. So I had both the wood and the styrofoam at a cost of nothing except my labor in bringing them home. The next week the bee float was built (10' x 12') and the hives were moved onto it, the ends of the float were tethered to the dock in the marsh and a mulberry tree at the edge of the yard.

For the next few high tides I watched that float like a hawk, for I had fears of it coming loose on an outgoing tide and my bees winding up on the seas of Long Island Sound, becoming a beekeeper's version of the "Flying Dutchman."

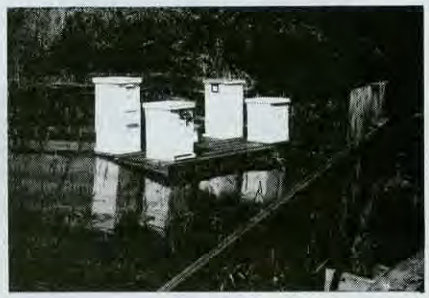
The "bee float" actually only floats for a three-hour period twice a day at the high tides. Usually there's only about a foot or two of water during a normal high tide. The float will list to one side or the other as the colonies become heavy with honey over the summer and you have to try to guess which hives will be your best honey producers and position them on the float accordingly.

Even with the float listing slightly I can stand on the low edge and it shows no sign of going under water. The only other consequence of this is that if I want to work the hives around high tide I have to wear a pair of boots to get to them.

The bees have been on the float for about a year now with no problems. My wife is happy that she has full use of the yard again for flower gardening and our two dogs are happy for they once again can roam over the whole back yard. I guess I can say my problem is solved!

Low tide

and high tide.



BOTTOM·BOARD