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Susan Steppenbacker Photo Supervisor

Kim Flottum Managing Editor John Root Publisher Cynthia Stephens Production Coordinator Rebecca Dull Subscription Manager Buzz Phillips Circulation Director Dick Kehl Equipment Editor Contributing Editors: C. Collison, G. Gibson, A. Harman, E. Jaycox,

R. Morse, S. Taber, R. Taylor, J. Tew, C. Mraz and C. Koover

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GLEANINGS IN DEC.'87

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COVER . . . This beautiful winter scene, complete with hive scale, was taken by Dave Fassbinder, Monona, IA. For more on scale hives and how to use them, see Root Research Review and The Scale Colony - A Management Tool, inside.



The New Year always brings a fresh outlook on life, and a little reflection on what has transpired during the past year, and years.

January marks the 115th Anniversary of *Bee Culture*, so we're going to take a short stroll down memory lane and look at some of the work done by our predecessors. Then, for an updated look, we'll introduce you to the staff and organization that bring you your magazine each month. "Making the Magazine" will be an insiders look at *Bee Culture*, both past and present.

But we must always look ahead, and "Looking Sharp" outlines some ways to make your beeyard look professional, and make working in it easier and more fun.

Swarming season isn't too far ahead for some of us, and with the Africanized bee situation looming on the horizon, how do deal with swarms will be important to all beekeepers. So "Swarm Catching" will be a wealth of information for all of us.

What with the Varroa mite on everybodys mind, we'll also take a look at this critter though the eyes of some folks who have been dealing with it for a few years. Excellent insights and suggestions are offered from those far more experienced than we in this.

What to do with all your wax, now that you've got it processed (see this issue), why, prepare some for your local or larger honey shows this year. "Judging Wax" will give you some excellent tips on preparing and showing this 'other' hive product.

So begin the New Year with solid information and good reading – catch *Bee Culture* in January! BEEKEEPERS Put your skills to work in overseas jobs in the

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THE INNER COVER

Intelligent Control

Once again the beekeeping industry has been put under siege by forces not under our control — APHIS, USDA and State Regulatory Agencies. Past results from similar attacks have been lethal for many beekeepers, and have certainly wounded the opportunities and outlook of many more. This must not happen again.

I doubt that APHIS has a particular grudge against our industry, but past performances certainly don't give us a "most favored" status. For whatever misguided, or perhaps unintentional reasons APHIS, at least partially, deserves the notoriety of being "The Worst Bee Disease" ever recorded.

I say misguided because APHIS does not operate in a vacuum. They do receive input from "informed" sources. These are primarily USDA officials, in several capacities throughout the country. These too are not without some notoriety. But these sources include others who depend on APHIS decisions. These are not necessarily unqualified advisors, but occasionally impartiality is not first on their list of qualifications.

State regulatory agencies, however, are an incredibly mixed bag of tricks. They run from the very best any industry could hope for, to the worst situation one can imagine. They too are not without their 'informed' sources, and much of their performance is due to this input. And, as with most government agencies, budgetary considerations and priorities take precedence over performance. Fortunately there are many exceptions to this, but sadly, many fit this role.

One aspect not mentioned, that certainly deserves consideration, is the independent attitude many beekeepers demonstrate toward *any* regulation. Flagrant violators of certain rules and regulations are the exception, but occur with enough frequency to warrant the less than saintly image we have. Perhaps "Just desserts" qualify here.

But this situation must not occur again. The fiasco that transpired after the initial tracheal mite find should have taught all of

us a lesson. All parties - APHIS, USDA, State Agencies and beekeepers MUST act in concert to protect the industry, not kill the members slowly. You cannot claim success when the treatment kills both the patient and the disease. And, if our product is contaminated by the treatment, or if it is even threatened by the side effects, the "cure" is not to be recommended. As serious as can be, the backlash of Varroa massive depopulations, misguided or unnecessary movement restrictions, over zealous or under staffed state agencies or contaminated products will surely be worse. I urge all involved in the decision making process to consider any control carefully.

My father always told me that life begins at 50, or at least he told me that until he reached 50, then he changed it to 60. Charlie Koover says that life begins at 90, and is productive enough for me to believe him. But since I haven't reached either of those notorious landmarks yet I cannot say with certainty that they are correct. I can say, with authority, that no matter when life begins, repairs begin at 40.

I have never been rich, and for much of my adult life I have not even been well off. This has often been by choice, as I have made conscious decisions to pursue one avenue of life style over another. But being poor is no fun. Given the choice, I guess I'd rather be rich, but who wouldn't. Nevertheless, being 'not rich' has forced me to make decisions that at the time seemed sound choices. For instance: Do I pay the rent this month, or go to the dentist for routine maintenance? An easy choice to make at the time, but now I am paying the price of dental neglect.

I recently underwent a painful and, in hindsight, unnecessary dental experience. It was also expensive. Very, very expensive. I missed work, had to eat through a straw for a week, and caused Diana all sorts of grief and extra work. And, I repeat, it was unnecessary.

If, in my misspent youth, I had attended to basic details, budgeted my income to include routine dentist visits, and generally behaved myself, all of this would have been avoided. It has been an expensive lesson. But one I have learned very well.

This experience lends itself to other aspects of life, and yes, to beekeeping as well. Attending to details, when they need attention, will save you time, money and probably some pain in the long run. It may be tomorrow, or next week, or even next season, but taking care of the little things now will be worth your while.

Oh yes, don't forget to brush and floss. Believe me, that is one detail I will *never* forget.

Finally, all of us here at Bee Culture — Cyndi in production, Sue in photography, Becky in subscriptions, Buzz in circulation, Dick in supplies, myself and our publisher, John Root — want to wish you and yours a joyous and happy holiday.

Like many during this time of the year, most of us will be spending a little more time than usual with family and friends. And, although it may seem a little hokey, we like to think of all of us as being something of a family. Our common bond is our shared interest in and love of keeping bees. So have a safe holiday season, and a happy and, let's hope, uneventful New Year.





December 1, 1987

The following figures represent current prices reported by our contributors. They are based on reports from many states averaged out for each region. Where insufficient information is received, no price is shown. The retail prices represent the price of each size jar.



Wholesale Extracted			Repor	rting R	egions		_			
Sales of extracted, unpre	ocessed h	noney t	o Pack	ers, F.C	D.B. P	roduce	r.			
Containers Exchanged	1	2	3	4	5	6	7	8	R	A
60 lbs. (per can) White	43.00	39.80	36.00	24.00	21.00	35.75	39.91	42.00	21.00-43.00	38.81
60 lbs. (per can) Amber	43.00	33.27	29.25	20.40	19.80	31.50	36.66	39.19	19.80-43.00	31.75
55 gal, drum/lb, White	.63	.65	.60	.40	.37	61	.57	.55	.4065	.54
55 gal. drum/lb. Amber	.63	.50	.55	.34	.33	.55	.49	.48	.3363	.49
Case lots Wholesale								here		10.
1 lb, jar (case of 24)	29.75	23.30	27.60	25.95	25.52	24.57	26.50	29.99	22.80-34.78	26.34
2 lb, jar (case of 12)	30.50	22.25	25.25	22.75	22.63	23.63	25.19	24.29	21.00-32.50	24.37
5 lb. jar (case of 6)	31.00	26.20	22.95	25.95	22.25	24.25	25.90	25.23	22.25-32.00	25.78
Retail Honey Prices									2000	
1/2 lb.	1.00	.90	.84	.85	.85	.87	.91	.89	.83-1.10	.89
12 oz. Squeeze Bottle	1.50	1.31	1.42	1.39	1.23	1.25	1.35	1.41	1.20-1.50	1.34
1 lb.	1.63	1.48	1.64	1.55	1.48	1.51	1.66	1.48	1.25-1.75	1.52
2 lb.	2.70	2.53	2.99	2.85	2.52	2.69	2.88	2.75	2.25-3.10	2.65
2-1/2 lb.	3.55	2.93	3.97		3.00	3.17	-		2.75-3.97	3.27
3 lb.	4.00	3.85	-	3.25	3.70	3.91	3.95	3.64	3.25-4.30	3.76
4 lb.	5.00	4.50	5.89	4.91	4.99	4.78	4.88	4.89	4.25-5.89	4.92
5 lb.	6.50	5.50	6.50	5.75	5.64	5.47	5.99	5.18	4.50-7.00	5.63
1 lb. Creamed	1.77	1.70	1.71	1.55	1.65	1.48	1.57	1.73	1.40-2.25	1.67
1 lb. Comb	2.25	1.92	2.52	2.25	2.29	2.05	2.11	3.25	1.75-4.25	2.32
Round Plastic Comb	1.75	2.10	1.50	1.85	2.19	1.83	3.03	1.65	1.50-3.00	1.97
Beeswax (Light)	.95	1.31	1.00	1.10	1.25	.85	.99	2.00	.84-4.00	1.32
Beeswax (Dark)	.85	1.15	.90	.85	.75	.77	.85	1.00	.73-1.25	.93
Pollination (Avg/Col)	30.00		-	27.50	17.00	19.00		26.50	16.00-30.00	22.81

Honey Report Graph Features

On the far right hand side you will see two different columns. The first, labeled "R", is the price range of prices reported from all contributors -- lowest to highest. The second column, labeled "A", is the average price of a particular commodity across all regions. Example: the range in price of a 1 pound jar of honey sold retail is \$1.25 - \$1.75 and the average price across the country is \$1.652

In the comments section you will see a figure called the "Price Index". This figure is only a descriptive statistic that compares ALL regions to the highest region of the month.

Example: Region 1 has a price index of 1.00 this month and remaining regions are compared to that index.

•Region 1.

Price Index 1.00. Sales steady to increasing, with prices at retail level steadily increasing. Wholesale levels slightly above buy-back. Colonies in good shape generally, but watch for spring feeding in isolated areas. •Region 2.

Price Index .83. Sales steady, prices steady to declining due to good supplies. Colony conditions vary greatly depending on fall flow. Dry areas will need feeding along with cool wet spots. But some areas doing well and wintering prospects excellent.

•Region 3.

Price Index .86. Prices lower to same, sales variable by region but slightly up

generally. Northern area colonies generally strong, but southern areas dry and colonies may need feeding.

•Region 4.

Price Index .72. Sales and prices down and prospects appear unchanging. Some beekcepers having difficulty with honey analysis of CC Loans. Generally colonies are strong with good winter stores.

•Region 5.

Price Index .67. Prices mixed, but generally lower, sales steady to increasing, with good to excess supplies on hand. Colonies generally in excellent condition, but isolated dry areas may need attention.

•Region 6.

Price Index .81 Sales brisk in most areas but some spots having trouble moving stock. Prices steady to slightly increasing. Colonies have good supplies and prospects for wintering good.

•Region 7.

Price index .87. Sales steady to increasing with retail prices increasing, demand steadily increasing. Winter stores good to great in most areas, and outlook promising for good carry-over.

•Region 8.

Price Index .9. Sales and prices steady, generally unchanged. Northern areas still dry (Nov. 9), and fall stores in short supply. Southern areas have received some moisture but still many are short. Feeding will be required in most of the area, to watch carefully.





Big, Bigger, "Hobbiest"

Dear Editor:

"No Excuses"?? Just a minute. Think. In this 1987 world where everything is "upscale" and "being made perfectly clear" "you know", words are being created every day. Verbs are nounified and nouns are verbicized.

You created a new word, a perfectly useful word, on the cover of the September issue.

"Hobbiest" is obviously the superlative hobby ("the mostest", big, bigger, biggest). I think we all agree — beekeeping is the hobbiest hobby.

Ann W. Harman

Buckwheat Bonanza?

Dear Editor,

I endorse the views of Mr. Steve Taber that besides other factors there has to be something in the pollen or nectar of certain plants, such as Buckwheat, that cause swarming which he expressed in "Why do bees swarm", May, 1987. We have been migrating one of our apiaries for 10 years to a site where Buckwheat is grown. Swarming has been a problem with our bees during the Buckwheat bloom. Whereas, swarming has not been encountered during the same period at other sites where buckwheat is not grown.

F. A. Shah Shah Beekeepers Kursu, Rajbagh, Srinagar 190008 Kashmir, India

Who Participates?

Dear Editor,

I am a hobbyist beekeeper and always read your article in *Bee Culture*. In one of your future articles could you inform us on the total cost of the honey loan program per year, and how many producers participate in the honey loan program per year?

Could you also inform us of the reasons opponents give for wanting to do away with the honey program? I think giving your readers this information would inspire them to write their Congressmen informed letters more often.

> Michael R. Rogers 793 Lovetta Drive Kettering, Ohio 45429

To Bee or Not To Bee Stung

Dear Editor,

With a \$3.00 package of York bees and a \$6.00 complete hive from Root, I started beekeeping as a boy in 1933. Wow, did I get stung in those years before Pearl Harbor!

In the 40's and 50's, continually adding colonies in my constant experimentation, I became so proficient that stings were rare. that turned out to be a problem!

In the early 60's, employed fulltime as a nuclear physicist, but only a hobbyist beekeeper, I had 63 colonies. It was then that an occasional sting started to bother me. Some pain, massive swelling, lowered blood pressure and high pulse rate, bordering on anaphylactic shock. Medical authorities, including the famous Dr. Halla Brown (who treated James I. Hambleton) said "George, Quit!". I gave my colonies to 4-H, Boy Scouts, Girl Scouts, etc. — and cried.

About 3 years ago, I read of the research done at Johns Hopkins on treating allergic reactions to stings. By total accident of a telephone call to the University of Maryland Apiary, I met Ann Harman. She encouraged me to be tested and treated by an allergist using pure venom. I did!

It was suggested that "a sting a day would keep the doctor away". I still get a sting a day, or more, and have no reaction. I'm as happy as a bear robbing honey!

So in 1987, 54 years later, with Ann Harman as my partner, together we have 33 colonies, representing Buckfast, Carniolans, Caucasians, Italians and Midnites.

I have not worn gloves in over 50 years and frankly, prefer to work bees in only shorts and shoes. I can feel the bee meandering around but they do not get trapped underneath clothing and then sting. Try it. The moral to this personal experience is — Get stung! George W. Imirie, Jr.

Ismus-Itus?

Dear Editor,

The bee industry sets up an Ismus-gate in the zone because of AHB, African Honey Bees. I have always wanted to go through the canal but haven't yet. Shucks, I don't have to go there to experience aggressiveness. I can have Ismus-itis in my own back yard. Just pick up a stick and probe the entrance of a colony. Travel will be the immediate priority. So, if the AHB's are soon to be upon me, I better begin to prepare myself.

I constructed a screened cage $3 \times 8 \times 14$ " to register in the flight board of a colony, and probed through the screen to gain immediate response. They did. But in such confinement, they did not sting. I even jiggled the probe a few more times to make them really "hot". Quite a few aggressors were in this cage. Quite a few. I did not use my smoker at all.

The field bees kept coming home and accumulated around and about, but were not aggressive, even when jiggling my probe with them in air and on wing. I was paying particular attention to this aspect, of course. Thirty minutes of this.

To clear the air and be of less concern to me in this endeavor, I took my screened cage and adapted it to fit my in/only, out/only "Traffic Controller" whereby the field bees could return in/only to the colony, and, all in all, never a sting.

Speculatively, all this makes me remember two colonies I once had: one was very hot and aggressive; another was sick with paralysis. Was this difference due to sperm differentiations? I believe so. The "chase me about" hot colony was sprayed with Raid every time I went to it to kill field bees, and after 2 or 3 days of dieoff, the colony settled down (surprised me at the time) and made a good showing from then on. The paralysis colony not treated but observed closely (figuring I should replace the queen as the book said) came out of it in 20-30 days to also make a showing. Comes down to bad sperm at matings, I believe. After the queen has disposed of said sperm, things might clear up by themselves??

All colonies have individual characteristics. Even AHB, I also read. So maybe the "hot" ones could be "doctored" with an in/out "Control"

Continued on Next Page



that the aggressive "brood" could be caught and disposed of . . . yet allow retention of the queenright AHB colony and not be too concerned with prescribed gross requeenings??

Ismus-itis? I guess so. Can I handle AHB? I believe so.

Roland Bell 6901 Robinhood Lane Ft. Worth, Texas 76112

Contest Comment?

Dear Editor,

When I received my September issue of Gleanings I was especially anxious to see the results of the July cover contest. Although I didn't personally send in an answer, I'm sure I'm not the only one who felt betrayed by what could only be termed a childish trick. I, personally, won't cancel my subscription to Bee Culture because of this since I enjoy and look forward to it each issue. But I wouldn't be surprised if some people did! We are mature adults (for the most part) who read this magazine and I won't feel satisfied unless you print an apology for your deceitful prank.

Also, I think you should reward

those who correctly identified the picture as the wing hooks of the worker honey bee. A. Cerana IS, in all the literature, referred to as a "honey bee".

I hope that you do something to satisfy the outrage you've caused or my esteem of your publication will be irreparably damaged.

Alex Dishball

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(Requests for bid information will not be accepted after February 15th, 1988.) Editor's Note:

I'm sorry you felt betrayed by our contest, and, yes there were a few readers who felt the same. I can only repeat my initial challenge: "... the first person who can tell me *exactly* what this photo is. Close doesn't count ... Be careful, it isn't *quite* what it seems."

The idea behind this contest was to have people examine the photo "closely". If this had been done, your first clue was that this obviously wasn't a 'worker', *Apis mellifera* wing due to the nearly flat hook sockets. Second, that although it was similar to a "drone" wing, the peg organs on the surface were not nearly prominent enough.

Finally, and this was the real reason behind this contest — things are not always as they appear. The "assumption" that something is, or isn't, often clouds the mind to other possibilities. Just ask the Florida Bee Inspectors about assumptions. Look, then look again, and to be on the safe side, look once more.

The answer, "Wing hooks on a honey bee wing" is NOT exact. Wing hooks on the wing of *Apis Cerana* IS exact.

Testing Your Beekeeping Knowledge

By CLARENCE H. COLLISON Pennsylvania State University • University Park, PA 16802

The success of a honey bee colony is dependent upon their ability to forage for the materials necessary for colony development, maintenance, and survival. Depending upon the needs of the colony, honey bees actively collect nectar, pollen, water and propolis as they forage away from the hive. These materials and provisions are collected by field bees; each requiring a distinctive set of behaviors. Foragers are directed to these materials by other field bees through and elaborate system of communicative dances.

Please take a few minutes and answer the following questions to find out how familiar you are with these materials and provisions that are actively gathered by the honey bee colony. The first ten questions are true and false. Place a "T" in front of the statement if entirely true and an "F" if any part of the statement is incorrect. (Each question is worth 1 point).

- 1. ____ Containers of liquid extracted honey packed by commercial bottling companies and found on supermarket shelves normally contain large quantities of pollen.
- 2. ____ Placing a pollen trap on a colony will increase the number of foragers collecting pollen.
- 3. ____ The protein content of different pollens is highly variable, therefore a mixture of pollens from several different floral sources is necessary to provide a colony a balanced diet.
- 4. ____ Water is temporarily stored in the hive within the honey stomachs of hive bees and sometimes in cells of burr comb.
- 5. ____ The sugars found in nectar are transported through the nectary by the process known as osmosis.
- Propolis has antimicrobial properties against various bacteria and fungi.
- 7. <u>Some</u> individual foragers learn to work two species of flowers at different times of the day as pollen and or nectar become available.
- 8. ____ Older honey bees are cap-

able of raising brood in a colony lacking protein without consuming pollen.

- 9. ____ Flower fidelity is a characteristic of foraging honey bees, however, several studies have shown that from 1 to 10% of the foragers normally carry mixed pollen loads.
- Propolis is normally collected during the warmest part of the day.

Multiple Choice Questions (1 point)

11. One pound of pollen is estimated to produce bees in the colony: A) 2,500; B) 500; C) 9,500; D) 4,500; E) 12,500.

Listed below are several floral sources that bees actively visit for: A) nectar; B) pollen or C) both. Please select the correct answer. (1 point each)

- 12. ____Willows
- 13. ____ Alfalfa
- 14. ____ Skunk Cabbage
- 15. ____Sunflower

- 16. What is the function of pollen inserts in relation to the beekeeping industry. (1 point)
- 17. Name two characteristics that can be used to determine the floral source from which pollen pellets originated. (2 points)
- 18. Name two reasons why trapping and selling pollen for human consumption could be a dangerous practice, thus warrants the carrying of product liability insurance. (2 points)

EXTRA POINT QUESTIONS

- 19. ____ Pollen grains are living cells produced by plants and serve as the male gametophyte (sex cells) in the plant's fertilization process. (True or False, 1 point)
- 20. Describe the process of the honey bee packing pollen pellets in the field. (4 points)

Answers on Page 713.



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P. O. Box 706 Medina, Ohio 44258-0706 (216) 725-6677

Book Review

Let There Be Forest by Arnold and Connie Krochmal

The world's forests are disappearing — slowly in some places and rapidly in others. The environmental and economic effects of deforestation are frightening to contemplate, and the need for world-wide tree planting of all sorts is massive.

This new book addresses these vital issues in a non-technical and educative manner. It will acquaint policy makers, development planners and students with the important functions of tree planting, and the pressing need to increase efforts to reforest the globe.

Dr. and Mrs. Krochmal are superbly qualified to treat this topic. He is a retired Principal Economic Botanist for the U.S. Forest Service, and is affiliated with the Botany and Forestry Departments of the University of North Carolina, North Carbina State University, and Atlanta University. Mrs. Krochmal has studied, and pursued an interest in, plants and trees throughout her life, and shared with her husband a Senior Research Fellowship at the Agricultural University in the Netherlands.

Their new book is beautifully illustrated with forty line drawings by P. van Straaten. It is sure to be of interest to agricultural and forestry professionals, students, environmentalists — indeed, anyone who is concerned about the future of our natural resources.

This book is distributed in the U.S. by Bernan-Unipub, 4611-F Assembly Drive, Lanham, MD 20706-4391. 1986, 95pp.



Plants for Beekeeping in Canada and the northern USA:

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For more information contact IBRA, Plants for Beekeeping, 99 Hurst Park Avenue, Cambridge, CB4 2AB, UK.§



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Q. How can you tell whether a hive has a queen without opening the hive and disturbing the bees?

John Curtin Gladstone, MO

A. A colony of bees, left alone, rarely becomes queenless. Loss of the queen usually results from manipulations and interferences by the beekeeper. If bees are carrying pollen in at the entrance, then you can be almost certain they have a queen.

Q. I am using two full-depth hive bodies for brood chambers, but because of their weight I am thinking of changing to three 6-5/8" supers. In early spring I will requeen, leave the bottom two supers for brood rearing, add a queen excluder and then add super #3. This super will be used to furnish empty combs for the queen to lay in as they will be exchanged for frames of sealed brood. I'll super up for the honey crop above super #3. Then in August, I'll harvest the crop and leave the colonies to winter in the three supers, keeping any fall honey for themselves. Is this a good plan?

> Charles R. Miller Scottsburg, IN

A. Basically, yes. The 6-5/8" "Illinois" super, as it is called, has many advantages over both the deeper and shallower sizes. The only hitch in your plan is that the bees will fill super #3 before the ones above it, so you may have to get your empty combs from the other supers. The best part of your plan is keeping open brood combs down below for the queen to lay in, thus inhibiting swarming.

Q. Why don't bees work at night, since they are able to work in the dark hives?

Clarence Hineman Bristolville, OH **A.** Bees sometimes visit flowers at dusk, but no animal can actually see in total darkness. A bee's primary sensory organ within the hive is her antennae.

Q. Should queen excluders be removed for wintering?

Earl Croisant Omro, WI

A. Definitely. They serve no purpose in winter and could cause the queen to become separated from the rest of the colony.

Q. I have one hive, consisting of three full-depth and two shallow supers. Last spring I harvested about one hundred pounds of honey from it. Apart from that I had not touched it in over two years. I won't need any more honey for at least another year. Can I get away with that kind of minimal attention, or are there some things I must do on a regular basis?

> H. J. McDonough New Smyrna Beach, FL

A. A colony of bees, properly set up and protected from rodents, weeds and dampness, survives just fine without human intervention. You will not get very good production by this "let alone" approach, but you will probably get all the honey you need for yourself.

Ed. Note: I seldom disagree with Dr. Taylor, and often defend his beekeeping philosophy. His answer, however, warrants my comment. Even if you

subscribe to the "let alone" beekeeping approach, and only harvest honey on an "as needed" basis, there are several things that need attention on a regular basis if you do not want to lose your hive. Disease inspection is, of course, the primary factor to check for. Not only for your own bees, but an infected colony, robbed by other bees, will aid in the spread of an otherwise avoidable situation. Minimal spring and fall inspections of the brood nest will probably be enough to handle nearly all problems, and still enable you to keep your colony going, but not, as Dr. Taylor suggests, productive.

Q. Does a deep bottom board with a rack reduce the gnawing off of the bottom edge of the brood frames? Milton O. Mills

Georgetown, CA

A. Possibly, but I have never experienced the "gnawing off" you describe, so do not know. Deep bottoms and racks are used for improved ventilation. They are a refinement, not essential to good management, and are not used by commercial beekeepers.

Q.1 have some brood combs completely filled with pollen, and the bees keep bringing in more, reducing the amount of comb area available for brood rearing and honey storage. Should these combs be replaced with foundation? Does the pollen become dehydrated in the combs and thus useless to the bees?

> Oliver H. Reeder Towson, MD

A. Lots of pollen in the comb is not only normal, but very good, as the bees absolutely depend on it for brood rearing. Those "pollen bound" combs will soon become completely filled with brood as the pollen is gradually consumed in brood rearing.

Q. What is the correct depth for a round section comb honey super?

Continued on Next Page



Questions ... Cont. from Page 681

The factory-made ones I bought are 4-3/4" deep. The ends are rabbeted to 1/2", so that the frames, as mounted it, leave a space of 1/2" at the top and 1/8" at the bottom.

John Schildhauer Homestead, FL

A. The correct depth is 4-1/2". The supers you bought are of the correct depth for a standard square section, but they are a bit too deep for round sections. If used the way they are you will get excessive burr comb on the tops of the frames. What you should do is rip them down a quarter of an inch, preferably before nailing them up, but they can also be ripped down after they are nailed without much chance of hitting a nail.

Q. Does the first or "prime" swarm always have the old queen? Harvey B. Moats Canton, IL

A. I believe so — but "always" is always a dangerous word in apiculture.

-Richard Taylor

Questions are welcomed. Please address to Dr. Richard Taylor, R. D. 3, Trumansburg, NY 14886, and enclose a stamped, self-addressed envelope for response.§





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Journaling — The Write Way

By KEN OLSON • 87417 Halderson Road • Eugene, OR 97402

Your experiences and performance in the beeyard this past year can guide you next year, and teach you how to become a "Master Beekeeper". By recording your observations, your decisions, and your regular manipulations in a journal, you will have a record to refer to. You can consider your performance carefully, evaluating each decision, noting consequences of each change, and refine your manipulations next season.

Famous explorers, scientists, statesmen, and a variety of authors have kept journals and have eventually even made them public. Helen Keller, for one, kept a journal for years during her struggle to obtain an education. The record of her courageous attempt to overcome handicaps inspires and guides readers through times of gloom and despair.

Admiral Byrd's journal also encourages readers who feel hopeless or discouraged in their experiments or in their pilgrimage through unplotted territory.

Your journal can offer you guidance and hope, too, as you learn from previous experi-ments, previous failures. If you crave for success, if you yearn for the satisfaction and happiness beekeeping can provide, perhaps keeping a journal is the answer for you. The range of experiences beekeepers face each year offers an education not available through other means. Beekeepers meet other people in unique circumstances, for example. They face crises and emergencies which are unique to beekeepers, and they use a vocabulary which is unique. They appreciate weather for subtle reasons, and they become uniquely aware of flowers, of insects, of medicines, of allergies, of bears, skunks, raccoons, and mice. The wise beekeeper, hoping to capitalize on these features of information will keep a journal in order to facilitate this education and make the learning potential as permanent as possible.

What kinds of information should go into the journal? Information most valuable for journal entries is that which will guide you in future operations. This information will bring success and satisfaction to the beekeeper-turnedwriter.

Make A Note ...

For example, notes as reminders make excellent journal entries. These mention the date of adding a super to a specific hive, or the date of introducing a new queen, or the date of medicating with Terramycin. The note might mention releasing the queen from her cage, or destroying queen cells, or reversing hive bodies. One of the most important parts of these notes is the *date of various manipulations*.

Other notes would indicate the condition of the colony. If dwindling seems apparent or rapid build-up seems to be in process, these should be written in the journal. If bees are bringing in pollen unusually fast, or if they are not bringing in pollen when it seems they should be, this could be noted. If lots of drones seem to be present, and this seems irregular, notes to that effect could be recorded.

Notes could be taken on the nature of the bees. Do they seem excessively hostile? Do they seem listless? Are many paralyzed? Are worker bees dragging out dead carcasses? These kinds of conditions need to be noted and compared at the next visit. Without the journal entry, you may easily forget which hive had which problem, and cannot determine whether the condition is getting worse or improving.

Notes on the weather can be useful for predicting honey flows. If cold temperatures keep the bees inside during the fruit bloom, the beekeeper can predict smaller honey harvest. If a ten-day warm, sunny spell opens the blossoms of raspberries earlier than last year, it's the journal entry that verifies and confirms the dates and duration of that nectar yield. Journal entries can teach you the sequence and duration of blooms, and amount of honey to expect.

In my journal, I record the dates and addresses of swarms I have captured. I like to know when the swarm has been hived for a week so I can reasonably expect eggs and larva to be present. If I have ten new swarms in ten new hives, I can't remember which hive is three days old and which is seven days old. My journal contains this data and helps me make crucial decisions concerning the future of the queen.

Journaling... Cont. from Page 684

Other notes in the journal record the condition of the furniture inside the hive. Is there a frame with a loose top bar? Is an end bar broken on frame #4 in hive #7? Are bees chewing through the foundation in hive #2? Similarly, notes could be made on the condition of the lid or the bottom board, or need of paint on the hive. With notes of this kind, you can come prepared to repair or replace the disorder on the next trip. Without notes, you may only vaguely remember there was a problem, but can't recall which hive had which specific need.

You can record evidence of predators visiting your hives, too. If skunks or raccoons have scratched at the front door, traps may be needed. If wax moth seems to be coming around, maybe a smaller entrance could reduce her mischief. If robbing bees are creating havoc, the notes would remind you to bring equipment to reduce the size of the entrance. Perhaps tall grass or weeds interfere with the flight of the bees, the notes will remind you the appropriate equipment to deal with this too.

Notes in the journal record errors of judgement you have made. Maybe

you left the lid off too long, and the raw wind chilled the brood. Maybe you opened the hive and allowed severe robbing to begin. Maybe you learned the hard way about protective clothing — tie those pantlegs tighter next time! Or, wear a heavier shirt, or wrap the wrists, and secure the neck button. Maybe the fuel in your smoker was too hot, or maybe you simply didn't have enough. Notes on these matters will remind you of these details and make your next trip more rewarding.

... The Benefit

The benefits of journaling are obvious for the conscientious beekeeper. The most apparent benefit is that journals help you stay in control of your operation. You can monitor the progress of your hives more accurately. You can refer to your journal and quickly determine which hives are growing stronger and which are declining, especially if you are recording weights from a scale colony. And, you can easily spot disease and decide if more medication is needed.

Another benefit to journaling is that this procedure will provide you with confidence. You know for certain which hives are doing well, which are recovering from a certain retarding disorder, which have had visits from predators, etc. Journaling eliminates guess-work and gives hard data immediately. Bees thrive best when their handlers know what they're doing, and why. Beekeepers who keep journals also know what they're doing and why, and this provide you with confidence and assurance.

Journaling regularly also sharpens your skills of observation. You'll begin to notice details you would normally otherwise ignore or overlook. Ants or earwigs, for example, suddenly become noteworthy as you write yourself a memo to deal with these pests at your first opportunity.

Journaling faithfully helps you avoid the anguish and the frustration of failure. You will see death by disease or starvation less and less as you learn the techniques taught by experience and recorded in your journal.

Regular journaling helps guarantee healthier hives, which produce abundant surplus. This makes more profits for the beekeeper and these profits, in turn, make both the beekeeper and his bees happy.§

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ANDLES

From the Sophisticated .

Candle Machines

andle making has probably been in existence since the first human found that animal fat could be cooked out of meat, cooled to a solid and stored away to be burned later. Animal fat may have been satisfactory for early man, but as time went on, he eventually noticed it became smelly with age, produced smoke as it burned and was messy to handle. There have been many waxes which gradually replaced animal fat, that have emerged from man's ingenuity, but none like that of the honey bee.

Beeswax is almost a pure, naturally refined material in the honeycomb form. However, removing it from that state and reshaping it into a candle creates several problems which have to be addressed before a commercial beeswax candle is ready to be placed on the shelf for sale.

The Wax

Beeswax and honey make a delightful breakfast meal when used as a spread on a hot roll or just from a spoon, but they are a terrible combination in a candle. When beeswax containing honey is melted, the honey separates into small globules which become interspersed in the liquid beeswax. If the beeswax is allowed to stand uncirculated, some of the honey will settle in the bottom of the container because it is heavier than beeswax. However, since the water content of honey is usually low, it isn't apt to adhere to other honey globules to form larger, heavier droplets that could settle to the bottom. As a result, the honey is likely to stay in suspension as the beeswax solidifies.

Honey globules usually create a log jam in a candle wick which tends to choke the movement of the beeswax up the wick and could eventually extinguish the candle flame.

The solution to the globule problem is to simply add water to the beeswax in ample enough quantities to absorb most of the honey globules in suspension. This process can be aided by stirring the beeswax and water mixture from the bottom of the container to the top for about ten minutes. Commercially, this is done with a pump. After the water has dissolved the honey, the pump can be turned off allowing the honey water to settle to the bottom of the container where it can be drained out.

The second wick plugger usually encountered is microscopic dirt and pollen in the wax. These must be removed, using at least a 1/2 micron or smaller filter. A candle wick is one of the best filters and if dirt and pollen are not removed before the wax is made into a candle, the flame could be put out by the debris. Commercial candle makers usually use high pressure filters with activated charcoal and other filter aids to remove these as well as other unwanted impurities.

Beeswax, right from the bee, looks like a flattened kernel of rice. It is white and translucent. However, after the bee finishes with it, the wax has traces of propolis, pollen and honey on it which changes its color to anywhere from a light amber to dark brown. The beekeeper may inadvertently increase the darkening of the wax in an attempt to melt and/or separate the honey from it. Heat itself is a color killer. The melting point of beeswax is about 145°F (63°C) and need not be raised more than 15°F (9°C) over its melting point to keep it liquid and flowing properly. The lower the temperature, the longer it can be kept liquid without color

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Building Your Own Beeswax Processor

By DR. ROBERT BERTHOLD, JR. Delaware Valley College of Science and Agriculture • Doylestown, PA 18901

With the wholesale price of beeswax being quite variable, many beekeepers have been finding ways to utilize their beeswax themselves. There have been numerous articles published on using beeswax for making candles, various types of polishes, batik, Ukranian Easter egg art work, and many others. However, little has been written about the small scale processing of beeswax to be used for the above purposes.

We have in our apiary, a solar wax melter which, although not highly efficient for rendering wax from old brood combs, does work fairly well for the hobbyist beekeeper for rendering wax, not only from old combs but also from wax scrapings and cappings wax rinsed free of The solar honey. wax extractor can be of almost any size with the key factors in building it being the use of two panes of glass separated by about 3/4" and painting the inside white and the outside black. The solar extractor should be oriented with the two pane glass cover facing the sun with some type of pan or tray arrangement inside to collect the melted wax. On sunny days, this device will

melt wax about 9 months of the year. Further refining of the wax from the solar wax extractor or from a cappings melter, if you have one, is to heat the wax in very hot water and then filter the liquid wax through a filter material such as a bath towel or sweat suit material.

We have been working on developing this beeswax processing tank for a number of years, and we are now quite satisfied with our current unit (see photo). We have found that it works best in handling beeswax which has already been partly refined with major contaminants removed. It works well in preparing the wax for making poured candles and can also be used as a small scale tank for making dipped candles.

Wax processing tank. A) tank; B) ball valve; C) immersion heater; D) electric control unit.



Materials

1.A container, preferably stainless steel. Steel, galvanized steel, copper and aluminum containers tend to darken beeswax processed in them. We obtained, from a soda distributor, a defective stainless steel container used to supply pressurized soda for soda fountains.

To

2. A stirrup immersion water heater. We purchased ours from an Agway farm supply store. Farmers use this type of device for heating water in out buildings where they have electricity but no hot water. We feel that the stirrup immersion water heater does a good job, since it rests on the bottom of the tank,

> thereby heating not only the water in the bottom of the tank but also heating the tank itself by direct contact.

- 3. An electric control regulator purchased from Walter T. Kelley Co.
- 4.A one inch lever ball valve purchased from Walter T. Kelley Co.
- 5. A one inch short brass nipple, two one inch nuts, two one inch rubber washers, a tube of automotive gasket forming compound and some teflon plumbers tape. All of these items are used to mount the ball valve to the tank, and we purchased them in a local hardware store.

Making the Tank

We used a hacksaw with a sharp blade to cut the top off the stainless steel soda tank and then used a metal file to smooth the newly exposed cut edge.

Next, we had a one inch hole punched in the side of the tank about four inches from the tank's bottom. This was done by an electrical

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change. Conversely, hotter temperatures speed up the darkening process.

The beekeeper and the candle maker alike should try to use the best equipment so that the beeswax color remains as light as possible. The ultimate in container and plumbing equipment (pipes and valves) is stainless steel. Hot water or steam should be used as the heat source. This is not always possible because of the expense involved but it will render beeswax with minimal color deterioration. A second, and less expensive choice is an aluminum container with aluminum plumbing, and hot water or steam as the heat source. Iron, copper or steel are the least desirable containers because acid in the beeswax will quickly corrode these metals producing black or green oxides easily picked up by the wax and are nearly unremovable.

Commercial candle makers usually melt large amounts of beeswax in stainless steel tanks to 200°F (93°C) in a few hours, filter it and quickly lower its temperature to 160°F (71°C) for processing without noticeable color change.

Beeswax candles can be made in any color but the most popular is ivory. Most commercial candles of this color are used for religious purposes. The majority of these are made with not more than 51% beeswax because of its high price compared to other waxes. The remaining 49% is usually a blend of paraffins that are compatible with the manufacturer's production equipment and the burning requirements of the candle user. This is not to say that pure beeswax candles are not made. They are, without a doubt, the finest burning candles available, if they are wicked properly.

Now that we have solved most of the potential obstacles with beeswax as a candle wax, the next requirement is a proper candle wick. There are several types of wicking available to candle makers, but only two are suitable for beeswax candles. They are the square braid and the flat braid.

The Wick

Most wicks are available in either bleached or unbleached versions. This is only an aesthetic difference. There are numerous sizes of wicking, with differences in the thread sizes and braid configuration. The square braid type is common in beeswax candles because of its vertical structure. Its name is derived from its nearly square end profile shown in Figure 1. Square braid wicks can be





designed to do things other than just burn fast or slow. The flat braid is more commonly used as a fast or slow burning wick and always leans over at its tip about 90°. It was named after the flat appearance as shown in Figure 2.



Candle wicks are mostly developed by trial and error, but even that approach can be successful after a day or so of tests. Religious type beeswax candles are the most challenging because of the many ways in which they are used. Most manufacturers make their candles and fixtures such that they are not interchangeable with other brands, so the candles must be made to perform well in all types of fixtures. Some churches burn their candles for a half hour each time, while others use theirs for three hours. Summer heat can cause bending, and air-conditioners make them run over, spilling wax on the

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alter linens. These problems have to be considered when choosing the proper wick design and wax formulation for a particular customer.

The Candle

With the raw material problems covered the actual candle production is the next consideration. Production quantities and speed usually set the standard for equipment prices. There are a few choices to consider as the best method to use. The two most common methods are extrusion and casting.

Extruded Candles

Extruded beeswax candles are made by processes using either a drum, an auger, or hydraulic compression. The names explain how the wax is pushed through the extruder.

The drum extruder, shown in Figure 3, was originally developed by Reed & Blanchard at The A. I. Root Company in 1895. It was the first "sheeter" and was built to extrude a continuous sheet of beeswax for making honeycomb foundation. Roland Stone of the R. C. Stone Company modified the original design in



Figure 3.

the early 1960's and developed one of the most durable beeswax candle extruders ever built. He sold extruders that were able to make three candles at once on one machine. One of his single nose drum extruders would produce candles with diameters of from 1/2" to 3" at a volume of 200 lbs. (90 kgs.) of wax used per hour. This is a relatively slow production rate. However, the key words here are "beeswax extruder". Not every candle extruder will extrude beeswax.

The principle of the drum extruder is comprised of a slowly rotat-

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Processors ... Cont. from Page 687

contractor who owned a hydraulic tool used to punch holes in electrical boxes.

The short, one inch brass nipple was then firmly screwed into the one inch Kelley ball valve, wrapping the threads of the nipple with the teflon tape before screwing it into the ball valve. The first nut is then screwed onto the end of the nipple which is extending from the ball valve, the first washer is placed on the nipple snug to the nut, a bead of the automotive gasket forming compound is squeezed on the inside of the washer. The nipple with the attached ball valve is then inserted into the one inch hole in the tank and another bead of the automotive gasket forming compound is squeezed around the nipple where it comes through the hole inside the tank. The second washer is placed on the nipple and the second nut screwed onto the nipple. The nuts are then turned tightly to make a wax proof seal between the tank and the nipple.

We have found that a much better seal of the nipple-ball valve mechanism to the tank can be done by having the seal secured by brazing. Brazing is used in many professions and if you don't know someone who can do it, check the Yellow Pages under welding.

A small petcock can also be joined to the tank as close to the bottom of the tank as possible. This can be attached by methods similar to those discussed for the ball valve assembly. This petcock can then be used to regulate the water level in the bottom of the tank. Be sure to test your tank, using just hot water, over some type of catch tray, before processing beeswax in it to make sure that all joints are water- and waxproof.

Using the Wax Processor

Add water to the bottom of the tank until you reach a line about one inch below the bottom of the nipple attached to the ball valve. Place the stirrup heater into the tank and plug it into the thermostat control unit, then plug in the thermostat control unit. Place up to 20 lbs. of relatively clean beeswax into the tank. Turn up the thermostat to full power and wait until the wax is completely melted and the wax-water begins to boil. At this point, the power can be reduced until the wax-water mixture continues to undergo a slow rolling boil. In order to produce beeswax that will make relatively dripless candles, the wax water mixture should be allowed to boil for at least 10 minutes. At this

time, the temperature should be reduced to slightly below the boiling point, and at least five minutes allowed to elapse before drawing out the wax for candle making or for other uses. This allows any water vapor in the wax to escape rather than being incorporated into the candles.

BE CAREFUL!

Wax can then be cautiously drawn out through the ball valve. Some notes of CAUTION. It is strongly recommended that you cover your work area, including the floor, with some type of water-proof, wax-proof plastic drop cloth. Also, stand to the side of the ball valve when you open it and have your wax pot over the ball valve because if the tank is filled with wax, the stream of wax exiting from the ball valve can spurt out several feet, severely burning you and making quite a mess!

Also, when you have completed any wax working session, be sure to completely empty the tank. We generally pour the liquid wax and hot water into some type of smooth sided bucket, allow the wax to harden and then pop the block of wax out of the bucket over a sink, remembering there is water in the bottom from the melting tank. If you do not do this and you allow the wax to harden over the water with the stirrup immersion heater in place, the wax will bond to the side of the tank when it hardens, and if you restart the stirrup immersion heater, the expansion of the water under the hardened wax could cause an explosion.

We have also found that sometimes while the melting tank is in use the wax solidifies in the ball valve. You can fix this by fully opening the wax clogged ball valve, holding the wax pot at the opening of the ball valve, and boring a small opening through the solidified wax using a long, narrow bladed screw driver.

Depending on how your ball valve was assembled at the factory, when you open it, the handle might run into the side of the tank. This can be corrected by removing the screw from the ball valve handle, rotating the handle 180° and reattaching it.

Use as a Dipping Tank

This same processing tank can also be used as a small scale candle dipping tank. Once the wax has been liquefied, boiled for at least 10 minutes to produce a relatively dripless candle, and allowed to cool to about 150°F, its level in the tank can be regulated by adding hot water to the tank to raise the level of the wax, or lowered by draining either wax out of the tank via the ball valve or water out of the tank via the petcock.§

Note: Over the years we have put together a lengthy brochure dealing with beeswax and many of its uses including candle making. If you would like a complimentary copy write to me at the address above and include a selfaddressed, legal size envelope with \$.44 postage.



Candles...Cont. from Page 688

ing, horizontally mounted, cylindrical drum, with chilled water circulating through it. The drum is suspended over a rectangular pan of liquid beeswax. As the wax level rises in the pan and touches the rotating drum, it solidifies on the drum's cool surface, is carried up over the top of the drum and is scraped off by a knife that is only a few thousandths of an inch above the drum's surface. The beeswax accumulates in a thin long orifice above the knife and converges into the temperature controlled area of the extruding machine. The beeswax is moved through the extruder by the wax behind it. Wick is introduced into the center of the wax mass at the reduced extrusion die opening and a warm soft candle is produced in a continuous strand. It is then either cut to length at the extrusion opening or cut into five foot long strips to be cut to length, pointed and based at a later time.



The auger extrusion method, shown in Figure 4, uses the above drum approach to create a ribbon of soft wax that is hoppered into an auger or screw extruder. Much of the auger extrusion technology was originally developed by the rubber industry, but this principle was modified by a German company to extrude either beeswax or paraffin candles.



The hydraulic compression method shown in Figure 5, is probably the newest candle extrusion technology. It was originally developed by Price Patent Candle Co. Ltd., in England. This original idea was modified, improved and perfected by most of the European candle machine manu-

facturers so what emerged was a very automated production machine. It utilizes either a prilled wax (powdered) or a chunk of pulverized cake wax. The wax pieces are deposited into a wax chamber in the top side of a polished 10" (25.4 cm) diameter horizontal cylinder. A hydraulic driven piston pushes the wax past the wax (inlet) chamber and through a reduced opening or diameter die. Wick is introduced into the wax as it moves through the outlet area of the extruder. A cylindrical column of wax is thus produced in a manner much like stepping on a tube of toothpaste. Its production volumn is best at 1,300 lbs. (600 kgs.) per hour. However, it requires many hours to change candle diameter sizes or candle types. It was specifically developed for large runs of one size. **Cast Candles**

Commercial candle casting using beeswax is uncommon, but not unheard of. The stickiness of beeswax creates a release problem so some type of mold release is a major consideration. Often, stearic acid is added to the beeswax to help with final candle removal. Also, silicone release agents can be used on the inside of the casting machines to lubricate the candle surface.

It is difficult to generalize about candle casting equipment because this method was at the very beginning of candle automation and mass production. There have been hundreds of different types of candle casting machines developed over the past 80 to 100 years. In general, commercial candle casting machines have multiple molds in numbers from 50 to 10,000. They are usually designed to make candles inverted (upside down) in their molds with the wick supplied from a spool underneath such as the machine in Figure 6. The mold is comprised of a



cylinder with a piston at the lower end. The piston has the candle tip mold embedded in it to make the pointed top of the candle. The piston rod is hollow to bring the wick into each candle. Beeswax is poured into all of the molds at once and they are filled to a level about 1/2 inch (12.7 mm) higher than the top of the mold. This allows for wax shrinkage. commonly called cavitation. A second filling is usually required to fill these cavities. When the wax has cooled and the candle is ready to be removed from the mold, the piston pushes the candle up and out of the mold. The candles are removed and the free wick end is cut off. It is secured in the center of the mold and the piston is returned to its original position for a new cycle of wax. More sophisticated molds have such things as a fluted tapered base at the bottom of the candle (top of the mold), or a water cooling jacket to cool the wax faster and more uniformly. Some of the most sophisticated machines do everything including palletizing the finished boxes of candles.§





The Media and Beekeeping: Trying To Maintain A Positive Image

By DR. JAMES TEW • The Agricultural Technical Institute • Wooster, CH 44691

"Newspapers, radio and television —

they all can help (or hurt) our cause"

www.endowedia.com orking with the media reminds me of trying to make friends with a snake (Please - no offense to the mass media people or to herpetologists). Generally, snakes are very beneficial and are considered to be "good guys". I just never really trust them.

Like it or not, we, as an industry, must work with the media people. In one 3 1/2 minute spot they can greatly help (or hurt) our beekeeping cause. It should be the constant goal of every beekeeper who has the occasion to use the mass media system to make beekeeping appear in a positive manner.

By now, some of you have already thought, "I don't need this. I will never be involved in the mass beekeeping media business." You just simply never know. Witness these few examples.

The Ohio State University conducted an Africanized Bee and Predaceous Mite Symposium during March, 1987. It was a media happening for beekeeping. United Press International sent a reporter to the symposium to talk with various beekeeping experts. For the "real world" flavor, he asked to talk to a beekeeper standing beside his hives. It was 4:30 PM, cold with a snow/rain coming down. I tried to explain that the bees take a dim view of being interviewed on such a bad day, but I had to compromise - the beekeeper would not have to open the hive, but just be near it. We called up a local beekeeper, who had no idea whatsoever, that he was going to be on the evening news, but he was standing beside his hive, answering questions about bees and beekeeping on a cold afternoon. With the news organizations, you just don't get much time to plan ahead.

Remember the accident that occurred in Alabama approximately one year ago. In that unfortunate event, a man was stung so severely that he died from the attack. Many beekeepers were asked for their ideas of what had happened that would provoke such aggression. Those beekeepers had no warning that they would be asked to explain why bees had caused the ultimate harm to an individual. It's a difficult position to be in. Certainly, a man's death can't be played down, but the public shouldn't be left with the impression that the average swarm of bees will kill upon provocation.

If I may give a lighter, personal example; a few months ago, I was soundly sleeping at approximately 5:00 AM. My phone rang and my wife answered it. In a hushed, sleepy voice, she told me it was WEWX radio in a major Ohio city and they wanted to interview me. I cleared my throat, hummed a bit (just to be sure that I had a voice) and confidently said "hello". A professional, friendly female voice responded that she was sorry to wake me, but they wanted to get this interview on for the morning rush hour traffic audience. What could this strange, abrupt interview possibly hurt? A recording that would be played in a few hours; I would already be at work in another city no problem. I agreed to the interview.



She responded by asking to hold on just a minute while she activated her remote equipment. (Panic on Tew's part). "I thought this was going to be recorded for use in a few hours", I queried in a voice that had suddenly awakened. "That's true, but we will be broadcasting while we are recording," she responded and we did the interview. It went along predictably, but throughout the interview, I had the overpowering urge to tell the audience that this interview was coming from a darkened bedroom, while I was in my sleeping clothes lying in bed. Would that revelation have had any effect on commuter traffic? It doesn't end here. One chance in millions, a co-worker, hours from Wooster, heard the whole thing and figured out what must be happening. He did the friendly thing and told everyone in Wooster. The moral to all this: You just don't have time to prepare. Be ready to do your best on short notice.

What is the Media?

In general, the mass media outlets are the TV stations, newspapers, magazines, radio and recently, video tapes, a totally new monster. Each avenue of the media has its own characteristics that make it unique.

Newspapers. Some of the best information concerning beekeeping has come from reporters with a flair for detail. A good newspaper article has the space and time to go into the detail that other visual forms do not; especially TV. Magazine articles, when done well, offer an even better avenue for beekeepers to express themselves. Most reporters/journalists have a good memory for detail – at least they should. I would recommend always being careful



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Tew...Cont. from Page 691

what you say even if they don't have their paper and pencil in the ready position. Several months ago, I did an interview with a local newspaper that was quite in-depth and, incidentally, quite positive toward beekeeping.

Naturally the subject of Africanized bees came up and I presented the usual discussion. The interview ended and the reporter prepared to leave. While walking her to the door, I made the closing comment the Africanized bees "were not from the bowels of hell, but were just well suited for a tropical climate." The next day's paper ran the line above a nice article stating that "OSU Professor Says Killer Bees Are Not From The Bowels Of Hell." The next few days were quite long for me.

Radio. In general, this is my favorite medium, mainly because I have the opportunity to freely edit. On the live sessions, of course, this is drastically different. I suppose the main reason that I like radio better is that I don't have to stare down the cycloptic eye of the video camera. It just never blinks. I have found that the car radio is an excellent place to get to people/beekeepers. I have heard of individuals who play tapes on trips to keep abreast of information or to replay recent presentations that were recorded.

Television. TV and video are killers, albeit the most powerful. The pressure of presenting live presentations when one is not trained in the field can be astounding. I don't know of any extension apiculture people who are trained in TV protocol. Getting that experience requires some embarrassing moments. The public is completely accustomed to high quality commercial/public TV. If a TV spot conveys the wrong message or if the quality of the video is low (never mind the quality of the information), the viewer will be unimpressed. Yet few people in the beekeeping business have access to high quality equipment or the funds to get high quality equipment. For the

briefest moment, that TV spot is the beekeeping industry to the viewers. It is a serious burden that the projected beekeeper momentarily holds. I know I sound a bit negative, and I don't mean to. We certainly need positive TV support anytime we can get it. It's just so hard to control (if any control at all is possible).

I recently was on a local morning show out of Cleveland. I was only on for 4 minutes or so. During that time the commentators managed to say the name of my employer incorrectly – not seriously incorrect, but none-the-less incorrect. Since I had such a short broadcast time, I made the immediate decision not to correct the show host. That proved to be a mistake that was pointed out to me by everyone of my superiors, even though the remainder of the session was reasonably good.

The Interview. As much as possible, manage the topic. You probably won't be able to do too much. Reporters and their ability to interview vary greatly. Some are prepared while others are simply on assignment and are "making it up as they go along". Rest assured that the topic will get attention. In reality there is little reason to talk, video tape or write about a topic that is not of general interest to the audience. The most frequent topics are the Africanized Honey Bee, Honey Price Supports, Stinging incidents, and others (eg. infant botulism).

In General

During these sessions, one must be polite and attentive. Don't be bullied. Be prepared to stop the session if it appears to be totally out of control. But be prepared to see the infamous hand in front of the camera that we see on TV when criminal suspects are brought before cameras. Even if you stop for positive and correct reasons, you can still be made to look goofy on the screen.

Always respond in short, author-

itative answers. Long orations will be edited. If possible, the interviewee should do as much of the editing as possible. Also, use as little beekeeping jargon as possible. The general public has no comprehension of supers and virgin queens and the like.

Humor or flippancy is dangerous and should be used very sparingly, if at all. A light attitude about serious beekeeping topics can result in a light presentation by the media. Some beekeeping topics are extremely serious to some in our industry.

Do not make a big deal out of stings or stinging. The general public is not impressed when a beekeeper says that you get accustomed to the stings. Why take on a hobby or job that requires that one learns to tolerate pain? Instead, describe protective clothing and precautions that are normally taken to prevent stings. Don't play stinging up, but don't play it down either.

Never speak negatively of other people, organizations or other beekeepers. Beekeeping is an extremely visible endeavor - sometimes for the wrong reasons, such as Africanized honey bees and stings. Everyone seems to be attracted to bees when they are safely exhibited in an observation hive or cage. The media obviously plays on that natural interest. The media can make the public more sympathetic to our problems. Further, people can be introduced to beekeeping who had not otherwise considered the craft. Working with the media will be with us for the long haul - practice is nearly impossible. All one can do is stay in control, stay informed and stay level-headed.

The Golden Rule!

IN EVERY CASE – always tell the truth. But, you will have to decide how much truth to tell. It is never an easy task, but the rewards can be incredible.§

This article was taken from comments made at the Eastern Apiculture Society meeting, August, 1987.



An Ounce Of Prevention . . .

By GEORGE MEYER, JR. • 1480 Brentwood • Troy, MI 48098

Tools ...

I am told you could tell if a 19th century physician was successful by the amount of blood on his gown the more blood, the better the doctor. People didn't respect a doctor with clean hands and equipment because it indicated his lack of experience.

By mid-century though, they discovered that unsanitary conditions allowed diseases to be transmitted from patient to patient. So doctors started to wash their hands and sterilize their equipment.

It occurs to me that a lot of beekeepers are still living as if in the 19th century. I, for one, used to think that only the novice beekeeper had a shiny hive tool or a clean bee suit.

But, recently, my thinking changed when I began work as an apiary inspector for the Maryland Department of Agriculture. Inspectors do not wear gloves because of the possibility of transmitting disease from hive to hive. I was also told that I

must clean my hive tools and smoker and wash my hands *before* leaving a yard. At first this seemed like an unnecessary practice, but rules are rules. But now I really like the idea.

The advantages of cleanliness are obvious.

First and foremost is the idea of not spreading disease. Just like the 19th century doctor's filthy scalpel, a gunky hive tool can spread American foulbrood from yard to yard. This probably doesn't happen often, but why take a chance? Alcohol won't kill the spores of AFB but it will allow you to wipe them off the surface of your tool.

I think it looks professional when I clean my equipment before I leave a yard. It gives me something to do with my hands while I talk to beekeepers or observers and wind down. Who knows, this may attract new beekeepers with a clean and slick image. I really can't explain it, but there seems to be something inherently good about cleaning off my equipment.

As soon as you are finished working in a yard and get back to your truck or your home, open up your smoker and stick your hive tool in it, straight end down. Remember to take it out after a minute or two. The idea is that the heat will soften honey, wax, and propolis, making it much easier to wipe off with alcohol. Of course, if you leave the tool in there too long, as I did once, you will fry it. I had to then use steel wool to clean it.

Now, while you are waiting for your hive tool to heat up, take a paper towel and pour some alcohol on it to clean off your hands. We use ethanol alcohol because it is supposed to be the best, but rubbing alcohol will do as well. Alcohol allows the propolis to come off easily. If you wear rubber gloves, the alcohol will help clean cleaning the smoker chamber though, it's not worth it.

I am not proposing that beekeepers should use sterile equipment. I have never learned how to remove ten year old propolis stains from my bee suit. The chamber of my smoker is going to stay black; I light a fire inside. But by simple, rational maintenance procedures, nearly all of your equipment can be kept cleaner and more professional looking.

Woodenware ...

The single event that separates "modern" beekeeping from "historic" beekeeping is the discovery of bee space and the subsequent invention of removable frames. As an Inspector, I've come across innumerable yards with rotted out hive bodies, and broken, unusable frames. I'm not talking about abandoned yards, or people who no longer manage their hives, but active colonies managed by good beekeepers. Using equipment

> like this sends the beekeeper back in time to the early 19th century, before removable frames. Like any type of equipment, bee hives and frames wear out in time. Wood just deteriorates from use and age. Old, rotten and broken equipment

should be repaired or replaced. Broken, rotted, unusable equipment makes the colony unmanageable.

In my opinion it is better to throw out an unusable frame full of brood than to do nothing. I am not saying that every dented or old frame should be replaced, but what is the point of having a removable frame that can't be removed? If the frame, or super can be repaired, do so. There is nothing wrong with a nail for an end

"Keep equipment clean and in good shape," is this beekeeper's message.

these too.

Next, remove the now-warm (not hot) hive tool from the smoker and use alcohol to clean it off too. Keeping a new tool clean is easy, but getting an old one shiny might take a little elbow grease and steel wool.

Finally, give your smoker a going over. The State of Maryland paints the wood panels on their smokers with polyurethane, so cleaning the bellows is easy. Just wiping off the bellows and the top of the smoker is fine. I don't recommend

The Scale Colony: A Management Tool

By MICHAEL BURGETT • Assoc. Prof. Dept. of Entomology Oregon State University • Corvallis, OR 97331

Introduction:

Regularly weighing a honey bee colony, or a group of colonies, has long been recognized as a valuable aid in devising management schemes to get the most from your bees. The weighing, or scaling of colonies has been used for a variety of purposes, such as assessing pesticidal effects, comparing bee strains, weather and climatic effects, but most frequently, to reveal nectar and pollen flow patterns. Good beekeeping requires a familiarity with the floral resources available within a several mile radius of an apiary. Not only is it important to recognize the major and minor nectar/pollen species, it is also important to understand the blooming patterns of these floral resources. A scale colony can be a formidable tool in assisting a beekeeper in understanding the floral resources being utilized by their bees.

This article is a review of four years of scaling one colony at a research apiary on the Oregon State University campus, Corvallis, Oregon. While this information will be of special interest to beekeepers in the Willamette Valley of western Oregon, we feel that the value of scaling to apiary management in general will be evident to a wider audience.

The data were collected over four calendar years, 1983 - 1986, during which time a single colony was weighed on a weekly schedule every Friday morning prior to the beginning of worker bee foraging. The colony was positioned on a Fairbanks platform scale with a 1,000 pound capacity. The scale has a 1/4 pound sensitivity, but each weekly weight was rounded to the nearest 1/2 pound. Once yearly the colony was temporarily moved to allow cleaning and if necessary, re-leveling of the scale.

Colony Management:

The colony was under what would be termed a minimum management system. From approximately September 1 to April 1 (seven months), the colony was housed in two standard deep brood chambers for "wintering". Each year, between March 1 and March 15, the colony was given a full "spring" inspection for queenrightness, food stores, and the presence of disease. At this time, the brood chambers were reversed and a dry bottom board put in place.

brood chamber second A reversal would be performed before the middle of April. The colony was not requeened during the four years, nor was there any evidence of swarming. It is assumed that one to several supersedural events took place. Western honey supers, in excess of need, were added, normally starting in the middle of April. At no time during the four year period was the colony given supplemental sugar syrup or pollen. Likewise, no antibiotics were administered during the four year period. Surplus honey was removed between August 1 and 15 depending upon the year.

Floral Resources:

Corvallis, at virtually 45° North Latitude, is centrally located in the Williamette Valley of western Oregon. The elevation is about 225'. Annual precipitation is 37", nearly all of which is in the form of rain. The majority of precipitation is received in the winter and spring. The summer and early autumn are notably dry with low humidity. The proximity of the Pacific Ocean, about 60 miles to the west, is a major moderating influence on the climate.

The region is characterized by moderate winters with early pollen and nectar resources in the late winter and early spring. The first potential surplus honey sources are from two species of maple, Acer macrophyllum L. (bigleaf maple) and A. circinatum Pursh (vine maple), which bloom sequentially from late March to late April. These deciduous tree species are normally utilized as colony building flows, but in exceptional years surplus honey can be produced.

The major honey sources are from the trailing berry species in the genus *Rubus*, especially *R. ursinus*, Cham. and Schlecht. (trailing blackberry) and *R. discolor* Weihe and Nees (Himalayan blackberry) which start blooming in late May and continue into early July. Also, during the berry bloom are several vetch species, the most important of which is *Vicia villosa* Roth (hairy vetch). The combination of berry and vetch

Continued on Next Page

"The methodical scaling of *at least* a single colony is an extraordinary aid in accentuating the 'keeping' in beekeeping."

Michael Burgett.

Scale ... Cont. from Page 694

accounts for the majority of surplus honey produced during a singular major honey flow that ends by the middle of July in most years. The Willamette Valley is, unfortunately, without any major nectar resources during the late summer period.

Apiary Location:

The apiary is located on a small research farm on the southwest corner of the 400 acre O.S.U. main campus. It is surrounded by natural wind breaks on three sides, being most open to the south. The honey flora are as described, with an advisory that, as with most university grounds, the O.S.U. campus is planted with a variety of 'exotic' plant species. No agricultural crops of potential honey value are located within the foraging range of the apiary. During the four years of weighings the apiary was normally stocked with no more than fifteen colonies, although occasionally, for short periods of time, as many as 25 colonies would be present. The apiary was not considered to be overstocked relative to the forage available.

Results:

Figure 1 is a bar graph presentation of the data for the average weekly weight gain/loss for the entire four year period. As is readily evident, the apiary annually experiences one major weight increase period during late spring into mid-summer. The first period of colony gain is a two week flow in mid-April which represents the availability of vine maple as a surplus nectar source. In only one of the four years was the

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maple flow sufficiently strong to produce a surplus crop worthy of extraction, however the strength of that one year was enough to influence the "average" weekly weight gain as illustrated in Figure 1.

The net weight gain is easily figured by summing all weeks with a weight gain (+144.25 pounds) and subtracting all weeks with a weight decrease (-41.5 pounds) which yields a yearly net of +102.75 pounds. This should not be misinterpreted as the average honey yield. It is the combination of propolis, water, nectar, pollen and the symmetrical changes in bee population. The net increase is, however, dominated by the nectar /honey income.

Weight Losses:

For 32 weeks of the average year the colony experienced a weight loss. During the longest dearth period, September 3 - April 8, the colony lost an average of 1.1 pounds per week, or just slightly more than 2.4 ounces *per day*. A period of critical weight loss begins at the end of February and lasts for six weeks, ending in the middle of April with the maple flow. It is during this critical weight loss period that most colony "winter kill" takes place. A short but dramatic loss follows the maple flow in late April and lasts approximately three weeks.

Weight Gains:

The primary colony gain period spans 13 weeks, from May 21 through August 19. During this 91 day period the colony averaged an increase of 136.25 pounds, which is 94% of the entire yearly gain. This is

Continued on Page 703





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RESEARCH REVIEW

By DR. ROGER A. MORSE • Cornell University • Ithaca, NY 14853

Arroa jacobsoni mites were discovered by beekeepers, for the first time in the U.S., on September 25. I spent the last week in October talking to researchers on Varroa mites in Great Britain, Germany and France. Beekeepers on the continent, on this side of the Iron Curtain, have suffered from Varroa for over a decade. Those I talked to are unanimous in their opinions on how to cope with the problem.

The ease with which we are finding Varroa in North America indicates to those in Europe that these mites have been in the U.S. for three to five years. Varroa mites are usually not found or seen in colonies during the first two to three years they are present. This means they are probably present in most, if not all, continental states today. The experience in Europe is that when one finds mites it is already too late to contain or eradicate them. Finding the mites in colonies when a small number of about 20 or 30, or fewer, are present is about impossible.

I was told repeatedly that if the reaction to finding the mites in the U.S. was like that in Europe, many people would want to close state borders and to enact quarantines. This will do no good, I was informed. It will not stop the spread of Varroa. Closing borders and making lines of defense was tried repeatedly in Europe and always without success. No one gained any time or advantage; in North America there could be serious economic consequences if this is done. However, I was also told that everyone in Europe expected the Americans to do exactly what was unsuccessfully done in Europe to stop the spread of the mites.

How to Find Varroa:

There is an easy way for beginners to find Varroa, if it is present,

"Varroa: Quarantines are useless, but attention to detail absolutely required for any type (biological or chemical) of control"

even in the winter, provided the colonies are not packed. The bottomboard is removed and cleaned and then put back into place. A piece of clean, white paper is placed on it with three or four 1/4" square or round sticks placed on the paper. Over this, place a piece of 8-mesh (8 wires per inch each way) hardware cloth. Both the paper and the hardware cloth should cover the whole of the inside of the bottomboard, but loosely so that both may be removed from the front without disturbing the hive further. One may put an entrance cleat in place with no trouble. The purpose of the sticks is to separate the paper and the hardware cloth. The purpose of the hardware cloth is to prevent the bees from disturbing or removing any debris that falls down onto the white paper. There is very little brood in most states during November and December, and sometimes early January in the North. Without brood, the mites remain on the adult bees and, of course, some die and fall to the bottom of the hive, where they can be detected. The paper, sticks and hardware cloth may be removed every three to ten days and examined, cleaned and then pushed back into place. If there is too much debris to examine by eye, it may be placed in a jar in a 70%



alcohol solution, then shaken, and the dead mites will float to the top.

In the spring, when the bees begin to start drone brood rearing, the best way to search for mites is to remove the drone cappings and to remove the developing pupae. They may be pulled from their cells with a forceps or, if a sink and running water are nearby, washed from the cells after the cappings have been removed with a sharp knife. In this case, the comb is held over a piece of white cloth that will catch the pupae and any mites that may be present.

Over 100 chemicals have been tested in Europe on Varroa control. Several of these will kill mites on adult bees, usually by way of fumigation. However, none of them will kill mites that are in capped brood cells and therefore protected. At present beekeepers that use one of these chemicals either cage the queens to stop brood rearing or treat their hives in the fall, October or November and sometimes later, when there is no brood. If brood is present one must treat the colony every few days to kill mites as they emerge from cells. This technique is obviously very timeconsuming and thus not very satisfactory.

The Future:

The miticide Fluvalinate holds the greatest promise for Varroa control. Tests were made by at least three laboratories in Europe with good results this past summer. The preferred formulation is that Fluvalinate is impregnated into plastic strips that are placed in the brood nest. Bees walk over the strips and pick up the chemical. Impregnated strips have a life of at least two months. The mites continue to be killed as they emerge from their cells. There is a serious

Continued on Next Page

Research...Cont. from Page 696

danger of contaminating the wax if the strips touch it.

Fluvalinate is manufactured in the U.S. by Zoecon Corporation. It is currently registered for use as a miticide by the U.S. Environmental Protection Agency. So far as I am aware, tests on residues in wax and honey have not been completed. It is not clear if it will be approved for use in the U.S. or not. The material is probably safe enough for those that produce package bees and queens. Whether or not the same is true for colonies used in honey production is not clear.

Coordinating Treatments:

It was agreed by those with whom I talked that it is useless to treat a single colony, or even a single apiary, for Varroa. There is much drifting of bees between colonies and even between apiaries. There may be perhaps more contact between bees in the field on flowers than we had realized. Treatment is effective only if all of the beekeepers in an area treat their bees at the same time. Reinfestation from feral colonies in trees and buildings, especially those that die and are robbed out, is very serious. If one beekeeper in an area fails to treat his colonies, much will be lost.

In beekeeping areas where there are no feral colonies, treating all colonies every other year might be pos-

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sible if the treatments are coordinated. However, feral colonies are almost everywhere and thus annual chemical treatments will probably be necessary even with the best chemicals.

Some Miscellaneous Facts:

- 1. The Varroa problem, meaning colony deaths, are more serious in the south of Europe than in the north where there is a longer break in brood rearing.
- 2. It takes two to three years for a population of *Varroa* in a colony to grow sufficiently to kill it. However, in the end, *Varroa* population growth is rapid and honey bee colonies are killed in a matter or weeks. Many, perhaps most, beekeepers in the U.S. will not need to treat their colonies this coming year and perhaps even in 1989.
- 3. Varroa produced in the spring are different in size than those produced in the fall.
- 4. The juvenile hormone level in the bees has a profound effect on whether or not the adult *Varroa* will lay eggs on the brood.
- 5. In Europe a number of hobby beekeepers lost their colonies and were forced out of beekeeping because they did not pay close enough attention to colony management. Attention to detail is necessary to keep bees in a Varroa infested area.

- 6. In the winter, adult Varroa can live on adult bees, without brood, for many months. Without adult bees or brood, their life expectancy is only a few days. Varroa may survive on dead brood for several weeks.
- 7. Good methods of biological control (that is, non-chemical control) are not available at present though this is obviously the preferred method of control.
- 8. In Europe the destruction of honey bee colonies by Varroa has been so serious that nearly all of the research laboratories there have been concerned with its control rather than any other bee research.

Some Miscellaneous Questions:

- 1. A researcher in Switzerland found Varroa on wasps, probably Vespula species. No one knows if this occurs commonly or not; it may have been accidental.
- 2. It is reported from Russia that drones may drift into colonies many miles from their parent colony. This should be researched further.
- 3. The time at which brood is capped varies by as much as a day, even within the same race of bees. This could affect Varroa development. Bees that develop more rapidly in the pupal stage may be somewhat resistant to Varroa.§

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HOME HARMONY

By ANN HARMAN 6511 Griffith Road Laytonsville, MD 20879

Just a few days ago you flipped the calendar and found DECEMBER staring you in the face. Radio and television remind you hourly that Christmas is "only so many days away". And you haven't found time to bake the fruitcake, or fill the cookie jars and candy tins. Panic! Hysteria! Now what?

Actually, it's not too late to salvage the situation. But this is not the time to spend hours in the kitchen. Here are some ideas for goodies that are quick and delicious.

Enlist the young children and grandchildren for making cookies. Teenagers can tackle the fruitcake confection. Let Dad try his hand with the jars of honey nut topping. And everybody gets to help — clean up.

This recipe has many possibilities. It serves as an ideal substitute for fruitcake; it can be treated as a candy; it is quickly made.

Confection Fruitcake Balls

1/2 cup butter 1/2 cup honey 1 cup fin. chpd. candied fruits/peels 1 cup chpd pitted dates 1/2 cup chpd raisins 1/2 c. finely chpd candied pineapple 1/2 cup finely chpd candied cherries 1 cup medium-fine chopped walnuts 1 teaspoon grated orange peel 1 teaspoon vanilla 1/2 teaspoon salt 1 teaspoon cinnamon 1/2 teaspoon allspice 1/2 teaspoon mace 1/4 teaspoon cloves 3-1/2 cups finely crushed graham cracker crumbs

In large mixing bowl, cream butter. Continue creaming while adding honey in a fine stream. Add all remaining ingredients except crumbs and mix well. Let stand, covered, several hours or overnight. Mix crumbs in well. Shape into 1-1/2 inch balls. Store, tightly covered, in refrigerator with waxed paper between layers. Makes 4 dozen small balls.

NOTE: Balls may be rolled in finely chopped walnuts, flaked coconut, or dipped in melted semi-sweet or milk chocolate. Mixture may be packed firmly into wax-paper-lined 4×9 inch loaf pan. Cover and refrigerate 24 hours before slicing with thin-bladed, sharp knife.

HONEY DELIGHTS California Honey Advisory Board

Many of our Christmas customs originated in Europe. Every country there has traditional cookie recipes; some are centuries old. The German Pfefernusse (translated as Peppernut) is a flavorful drop cookies.

Pfeffernusse

1 cup butter or margarine, soft 1-1/2 cups honey, slightly warm 3 eggs, slightly beaten grated rind of 1 lemon 1 teaspoon ground pepper 1-1/2 cups milk 5 cups flour 1 teaspoon salt 1 teaspoon baking soda 4 teaspoons baking powder 2 teaspoons ground cardamon confectioner's sugar (powdered) Cream butter, drizzle in honey while continuing to cream. Add eggs and continue creaming until mixture is very light in color. (Dark honey will make a darker mixture.) Add lemon

rind. Sift dry ingredients together and add them alternately with milk to the creamed mixture. Drop, from the tip of a teaspoon, on buttered baking sheet. Bake at 350° for 15 minutes. Roll immediately in confectioner's sugar. Makes about 50 cookies that will keep indefinitely.

THE HONEY COOKBOOK by Juliet Elkon

Someone will find the 5 minutes

it takes to make this simple recipe for cranberries. It will keep in the refrigerator for up to a week, so you can make it ahead of time.

Lemon-Honey Cranberry Sauce

- 1-1/2 pounds cranberries
- 1 cup water
- 1 cup honey (adjust for tartness)
- grated rind (zest) of 1 lemon

(an orange may be substituted)

Put cranberries with water in a small pan, cover and simmer 5 minutes until berries burst. Take from heat and stir in honey and grated rind. Store in refrigerator but serve at room temperature.

WASHINGTON POST

Now what about something for breakfast — not fancy and time-consuming, but just plain good!

Honey Wheat Soda Bread

- 2 cups whole wheat flour
- 1/2 teaspoon salt
- 1 teaspoon baking soda
- 2 tablespoons honey
- 1 cup buttermilk

(can use reconstituted powder) 1 egg, slightly beaten

In large mixing bowl, combine flour, salt and soda. Make well in center. Add honey, buttermilk and egg. Stir just until moistened. (Batter will be soft.) Place in greased 1-quart casserole. Bake at 375° for 20 to 25 minutes. Cook completely before slicing. And serve it with honey of course!

And serve it with honey, of course! HONEY... ANY TIME California Honey Advisory Board

Since all your friends and relatives know you are a beekeeper and receive jars of your delicious honey from time to time, you may be

Continued on Next Page

Home...Cont. from Page 698 a bit stuck for a gift. Here's a recipe, a bit different, that uses your own honey and is suitable for anyone.

Honey Nut Topping

•Select a wide-mouth jar with tightly fitting lid.

•Layer UNSALTED nuts — almonds, walnuts, cashews, Brazil nuts, peanuts, pecans, hazelnuts, etc. and •Cover each layer with a mildflavored honey

This treat gets better with age. Use as a snack and as a topping for fruits, cake, ice cream and even hot rolls. 1986 HONEY RECIPES

from the Honey Queen, Northeastern Kansas Beekeepers

Now that you have taken care of goodies and gifts, you can take a few minutes to fix something special for supper, whether it is just for the family or whether friends and relatives will be joining you.



Honey-Glazed Vegetables 1 can (10-1/2 to 10-3/4 oz.) cond. french onion soup 1/4 cup honey 1 tablespoon cornstarch 1 teaspoon grated orange peel (zest) 1/8 teaspoon nutmeg 2 pounds carrots, sliced, cooked, drained grated Parmesan cheese

In a 10-inch skillet, combine soup, honey, cornstarch, grated orange peel and nutmeg. Over medium heat, cook until thickened, stirring constantly. Add the carrots. Over low heat, cook 10 minutes or until carrots are glazed, basting frequently. Tun into serving bowl; top with grated Parmesan cheese. Makes 6 servings.

CAMPBELL'S CREATIVE COOKING WITH SOUP

You're all set! Except for one thing — don't forget to leave a jar of your best honey for Santa!§

OUNCE... Cont. from Page 683 lug on an old frame.

A lot of beekeepers don't like to go into the brood nest and I've never been able to figure out why. Maybe they're afraid of killing the queen, but more likely its the attitude "If I don't know what's happening, it can't hurt the honey crop." Beekeepers should go into their brood chambers regularly. How else can you discover if your bees are queenless or diseased, or if equipment needs replacing?

Replacing a rotten hive body is simple. Get an identical super, remove the frames from the old one and put them into the new one. Easy, simple, and quick. The 15 minutes spent on this operation will actually save a lot of time and headache with every future inspection of the colony. Just imagine how easily those two deeps will pry apart. The extra hassle is well worth it.

Replacing broken frames is also easy. There are probably hundreds of ways to remove unusable frames. If the broken frame contains honey, simply extract it and throw the frame away. Extracting time is an excellent opportunity to check the condition of your equipment.

However, if the broken frame contains some brood, thereby not suitable for extraction, most beekeepers want to avoid throwing the babies out with the bath. One idea is to allow the brood to emerge, while keeping the queen from laying more eggs in their place. I put the bad frame in another



super, separating it from the brood chamber by either a queen excluder or a honey super. This prevents the queen having access to the frame. The only trick is to remember to throw the frame away at the next visit. If you use a queen excluder make sure the drones have an escape route. Nothing will clog an excluder faster than a bunch of drone bodies.

One of the biggest problems I find with frames is that when trying to pull them up, only the top bar moves. Place an extra nail going from the end bar into the top bar. Everyone puts one or two nails going from the top bar into the end bar, but one more nail going in a different direction makes a big difference. I have gone through super after super trying to find a single frame that would come out.

Now don't get me wrong, I'm just as delighted as the next guy to see that my colonies have a bumper crop of honey, but I find that looking at honey is kind of boring: "Well, Martha, its there, about 50 lbs. ...". To me, the brood chamber holds a lot more interest. It seems that some beekeepers are missing out on all this fun. What is your brood pattern like? Are they diseased? Why did they put pollen there? One important result of regular brood inspection is that the propolis seal on the hive body is cracked, and frames are loosened. Having usable supers that contain removable frames is what makes us 'modern' beekeepers.§

BEE CULTURE'S

This past year the research team at The A. I. Root Co. has been testing equipment, feeding schemes and monitoring devices that any beekeeper might use. Some have been successful, some not and others need more time to evaluate. In any case, we hope some of the information presented here will be valuable to you.

Honey Plants

A variety of honey plants were tested to evaluate bee visitation. Species planted included sunflowers, sweet peas, vetches and other legumes, herbs, annuals, and ornamentals. Although testing was done on parent lines of sunflowers, almost all of the hybrids had about the same number of visitors. In some regions, sunflowers are an important source



Bees on Anise Hyssop flower stalk.

of nectar and pollen, but given a choice, bees will work other flowers more vigorously. The one exception was a male-sterile parent called CMS 89. This was exceptionally popular and any of its hybrid children with and '89' prefix (such as variety 894) will be favored.

Test plots of various herbs were planted including thymes, mints, anise, hyssop, basils, lavender, coriander, monarda, and chives. While all were popular, the top of the line was anise hyssop (*Agastache foeniculum*). At any one time you could count 40 bees on any nine plants. What would an acre yield? Next year more careful side by side comparisons of 25 foot rows will be done. Nevertheless, any of these herbs planted will have bee visitors.

Other plants tried did not flower this year and cannot be evaluated until next summer. These included Baptisia, Mt. Mint, Bird's foot Trefoil, Chapman Honey Plant, Mother-of-Thyme (T. serphyllum), Alsike and Dutch White Clovers, Sand Vetch, and Pellet's tuberous vetchling. Others tried with various success were Reseda, california poppy, batchelor's button and some marigolds. All were somewhat visited, though not with the same vigor as the hyssop. The biggest disappointments were the Golden Honey Plant (Actinomeris), the Mexican sunflower (Tithonia) and the buckwheat. These had limited visitation in this area, though in Wisconsin, Golden honey plant is as popular as hyssop.

Oilseed Rape was planted as a cover crop (to control weeds) and proved to be a valuable early spring flower and again as a late fall flower. It re-seeds freely, like buck wheat, so it gets rototilled at regular intervals, comes up and flowers again. Although the honey crystalizes quite rapidly, it should be a good early source of food.

Knox Hive Scale (K-3 Super Balance)

1987

Mr. Austin Knox in New Milford, CT, let us try several of his hive scales this year. These are an extremely useful device to monitor the activity of a colony without repeatedly tearing it down. They are well and cleverly made, simple to operate and tell if your colony is eating up its' stores and therefore should be fed (rapid loss), or if you have a weak hive (weight remains the same) or if you should add supers (fast gains). It was helpful in assessing the Shaparew ventilated top to see if more honey was produced.

Wood Preservatives

An ongoing experiment trying out various wood preservatives includes painting bare wood hive bodies with these items:

- White paint
- Wood guard™ (contains copper-8quinolinolate)
- Wood SealTM
- USDA Forest Products: linseed oil, paraffin, turpentine

All four are doing well after only one year, but the painted equipment is beginning to show some wear and tear, chipping and cracking that the others are not. Time will be the judge.

Jenter Queen Rearing Equipment

This is a simple modular system for transferring eggs and larvae for queen rearing. It is a non-grafting technique, so you don't need the grafting tools, you can't drown the larvae, and can control the age of the eggs. the only drawback is losing some of the many pieces and the shrinkage of the plastic box if put in a

RESEARCH REVIEW

solar wax melter to clean. Anyone can raise queens, if they have a good system of cell builder colonies and feed, feed, feed.

Shaparew Hive Top Ventilators

Tried for two bee seasons, the one big difference noticed is that the front entrance congestion in the hot summer months is drastically reduced. There seems to be some increase in honey production as well, as the figures below will indicate. However, we have had two low-tomedium honey flow seasons in this area, so impressive data have not been collected.

Frames

When evaluating types of frames, we tried several kinds placed on a new package, giving the bees free choice. In order of preference the bees preferred:

- Wax foundation in wood frames
- 'Wire screen' foundation coated with wax in wooden frames
- Foundation with wax-coated plastic base in wooden frames
- Plastic frames with wax-coated plastic foundation base
- Plastic fully drawn frame and comb
- 'Wire screen' foundation, uncoated

Anything with beeswax is of course preferred by bees. We liked the plastic-based foundation, although it was hard to get bees to work it fully. There is no wiring and no sagging (both plusses) and easy to clean. The plastic foundation/frame, however, is a disaster; much too flexible and soft, easily cut with the hive tool.

The all-plastic fully drawn combs were not regarded with enthusiasm. Bees did work them and





Hive on left equipped with Shaparew Ventilator, on right without. Photos taken same day.

put in some honey, but we found them difficult to uncap, necessary when using a hand extractor, and the spacer separators kept snapping off. But they do have the advantage of low maintenance (no wiring).



Hexagonal wire used as foundation.

The all-wire foundation was an experimental mesh with the screen

shaped in a hexagonal pattern. If there was no wax painted on, the bees would draw out drone comb. This may be an advantage in nonchemical control of *Varroa*.

With wax, a good worker comb was made and the wire base made a durable comb.

Feeding Experiment

The pollen substitutes available to beekeepers and used for feeding bees were again examined. Small 3.5 oz. paper cups were cut in half and filled with a particular pollen substitute: Control (powdered sugar with Terramycin), Terra-Brood mix, T-10, Provity and Mann Lake's Soy Flour. The results of our two



P utting my bees "to bed" for the winter is always a somber task. It carries with it the sense of a fulfillment, as completion, and now, the long winter's wait until I start again the joyous cycle.

The skies are grey, the goldenrod and asters lie dead, and the bees are torpid. They do not fly except, occasionally, a few angry ones emerge to drive off this intruder. If I remove a cover for a moment the huddled bees, half sleeping, shiver with annoyance, and I quickly recover them. They have a long wait ahead of them. The earlier generations were born to fly in the sunlight and visit the blooms. These bees were born only to wait out the winter, to keep themselves alive in the darkness of the hive until new generations take over with the blooming of the crocus and the apple blossoms. It must seem to them an eternity; yet on the other hand, I'm sure the bees, mercifully, have no sense of the passage of time. I, of course, do, and I awaken to these frosty mornings with the feeling that it will be forever before I get back to my bees. But I will, and the long months until then will be lived in anticipation. I'll watch the winter from indoors. I take no joy in the feel of it. My shed is supplied with firewood, and the potbelly stove in my shop will warm me as I do a bit of puttering, repairing of frames, getting more supers ready, and letting my mind go woolgathering once in awhile.

My method of preparing the bees for winter is the essence of simplicity, like most of my apiary activities. I don't feed them. Comb honey beekeepers seldom need to feed their colonies. We may get a little less honey in the supers, but we always approach winter with plenty of honey down below, so it evens out. Wintering bees is, for the comb honey beekeeper, pretty easy. I never wrap

BEE TALK

By RICHARD TAYLOR • R. D. 3 • Trum ansburg, NY 14886

"Problems? Nonsense! We'll meet, and cope, as always. I know that flowers will bloom and bees will fly as before. And will forever."

them either. The honey they have stored is the best protection. Each entrance has a wedge of hardware cloth shoved in it to keep mice out. Most of those wedges are still there from previous winters. I seldom remove them, but occasionally one has to be replaced. A couple of staples from my staple gun will hold most of them in, though occasionally a skunk will pull one loose. I also slap a scrap of tar paper over the entrance, to keep the wind out. A couple of staples will hold most of these in place until spring. The bees get in and out around the edges of the tar paper. And I put a brick or piece of wood under the back of each hive, tilting it forward. This prevents dead bees from obstructing the entrance. And that's about all there is to it. I can put a whole apiary to bed in just a few minutes. I won't see them again until April.

Going into comb honey beekeeping was one of the smartest things I ever did. Actually, I can't



claim any credit for being smart here; it was just good luck. For years I was extracting tons of honey each fall and having a wonderful time at it. I always tried to finish by the first of November. Each year I made some improvement in my honey house, which gave me a good feeling, because I really don't have much sense about mechanical things. But eventually it became a chore. I'd spend day after day, and into the night, extracting honey, all by myself. I didn't want to hire help, because I didn't think it would pay. The lovely person I was then married to was willing to help, but she really took no joy in it, so I hated to ask her.

So one day about ten or twelve years ago, I decided to sell all my bees, except for one apiary which I would use just for comb honey. A couple of commercial beekeepers bought all the rest of my apiaries, and someone else gave me a real nice price for all the extracting equipment. Suddenly my wonderful honey house stood empty, except for a large table and a pocket knife — the honey house tools of the comb honey beekeeper.

I thought one apiary ought to be enough to satisfy my love for beekeeping. But it was not to be. In a year or two I had another apiary going, and then a third, and then a fourth. Now I have my eye on a spot to the north, in buckwheat territory, where I think I'll start up a fifth one.

How come all this expansion, when I had thought I was cutting back? Well, my good luck was to switch to comb honey just as an interest in specialty foods, and especially comb honey, was starting to rise. And I could see why. My comb honey was far nicer than any honey I had ever produced. You almost never see black locust honey in jars, because by the time it gets extracted it has

Continued on Next Page



plan a beekeeping management calendar that will improve the productivity of our bees and the enjoyment we receive from them.

Summary:

On an annual basis the actual production from a hive or group of colonies will be most strongly influenced by two factors; 1) the floral resources available in concert with local weather conditions, and 2) beekeeper management inputs that maximize colony growth to coincide with the period(s) of major honey flow. The methodical scaling of at least a single colony over a longer period of time is an extraordinary aid in accentuating the "keeping" in beekeeping.§

Scale ... Cont. from Page 695

a daily gain of 1.5 pounds. During the third and fourth weeks of June the colony underwent its most dramatic weight change, +42.6 pounds, which is a remarkable 30% of the annual gain.

The "Average" Year:

The concept of "average" is a statistical construction. No given year will ever result in a colony weight profile identical to Figure 1. This is dramatically illustrated by examining the colony weight profiles for two years of the study, 1983 and 1984 (Figures 2 and 3). Paradoxically, 1983 was one of the worst, and 1984 one of the best, honey years in several decades in the Willamette Valley. The colony net weight gain for 1983 was 56.5 and for 1984, 157.5 pounds.

Another potential misinterpretation would be to consider this single colony as an "average" hive of honey bees. The actual weight gains/losses and "averages" are most properly viewed from a relative perspective. But knowing this, we can begin to





Taylor...Cont. from Page 702

become mingled with honey from other sources. But I could offer pure black locust honey in those years when we got a flow from that source. And so it was with the other honeys. They were almost always from just one source, and they were lighter and more delicate than anything I had ever been able to produce. No wonder my customers loved it! Now I can't keep up. I had people coming to the house to buy fifty and sixty combs at a time, and I am still getting requests in the mail for "that delicious black locust honey", long since sold out. My honey stand is run on the honor system, so I rarely meet the customers who stop there, but more and more of them are catching on to comb honey. I left a pad of paper and pencils there, with a note inviting those interested in getting comb honey by mail to leave names and addresses. Now I have a whole

bundle of these, but I'm going to have to wait until next summer to get in touch with them, for my crop was sold out before Labor Day.

We get some problems in beekeeping, but if you are a serious and dedicated beekeeper, then the problems will never come close to matching the joys. For several years there has been a lot of talk — way too much, I think — about mites and Africanized bees and competition from imports and this sort of thing. I have not lost a moment's sleep over these. Most such problems are much bigger in the imagination than in reality. We'll meet and cope with problems, as we always have, and I know the flowers are going to bloom as before, the bees will fly, and I will be keeping bees until I go to my grave.§

Questions and comments are invited. Enclose a self-addressed, stamped envelope for prompt reply.



Active vs. Passive Beekeeping

n the September issue of *Bee Culture*, friend Richard Taylor discussed his ideas on why it is that so many people take up beekeeping but so few stay with it. He notes that many people begin beekeeping with great enthusiasm but after a year or two they neglect their bees, even fail to take off the supers, and drop out of beekeeping.

Dr. Taylor says that none of his beekeeping students has become a serious, long-time beekeeper. He blames this situation on the problem of marketing or otherwise disposing of the honey crop. All that sticky and messy work to produce a store of granulated honey with no outlet is enough to reduce any interest in beekeeping quickly, according to Taylor. He then explained several easy ways to get rid of the honey, which I hope he also told his previous students. If so, it does not seem to have solved the beekeepers' dropout problems.

As sometimes happens, I can offer other explanations for why people do not last long in beekeeping. To begin with, we can exclude all those people who quit because the supers were too heavy, because they were sensitive to stings or were basically afraid of bees. My experience has been quite different from Dr. Taylor's. When I first took a beekeeping class at the University of California, Davis, there were 13 of us learning to keep bees under the tutelage of Dr. John Eckert and Herman Menke. Many years later we could count nine people from the class actively involved in beekeeping and I still have contact with several of those good friends. You might say that things were different in those days and you'd be correct. Most of us

THE BEE SPECIALIST

By ELBERT R. JAYCOX • 5775 Jornada Road North • Las Cruces, NM 88001

"When you are an ACTIVE participant in the success of your colonies, you are much less likely to fail — and give up"

had come out of military service and we were ready to do something different.

But my experience in Illinois was somewhat similar. As I taught offcampus beekeeping classes I saw many nice people take up beekeeping or increase their holdings after they took a semester-long course, usually 14 weeks. The same people became active in local and state associations and they are still taking part and keeping bees. One student took both of my on-campus courses, Bee Behavior and Beekeeping. When he graduated with a general major, he said he knew as much about beekeeping as anything else, and got



a job with a commercial beekeeper in California. He ultimately went into teaching, but I'll bet he still keeps bees.

If I were to try to pinpoint the reason that aspiring new beekeepers give up, I would blame it on their accepting the philosophy that bees do best without the interference of the beekeeper. When you warn a student that they should not open the hive very often, that they should assess the bees' needs by looking at the entrance or listening to the hive sounds at night, that they need not replace the queen or the old, black combs regularly, and that it is detrimental to feed sugar syrup, you have asked the student to use a bee hive or colony for a garden ornament instead of an item

of husbandry. In essence, you have told the person not to get too interested in bees and to do as little management as possible!

This past September I received a call from a beekeeper in northern New Mexico. Robber bees were cleaning out his dead colony and he thought he had a swarm at the hive. and at the windows of his home. He had kept one colony for seven years without ever doing anything to it but pulling a few combs of honey. When we discussed the simple essentials of managing a colony of bees and the fact that bees have diseases, he decided to get rid of his now-defunct colony and quit altogether. In other words, when the bees couldn't take care of themselves, he was willing to give up completely. This response may be the usual one for people who have been lead to believe that letalone beekeeping is the best system.

Bees are not infallible little animals, especially when they have been subjected to selective pressures by man for centuries. For example, in nature they used to move to new combs regularly and used the old combs for storing honey. When we found that we could reuse combs in movable frame hives, we forced the bees to accept them and told ourselves that this is what the bees prefer. Even in skep beekeeping there was renewal of combs because of the system of management and harvest. New beekeepers need to be taught how to manage their bees and how to assess colony needs by examining the broodnest. They should be encouraged to open hives as often and for as long as they want. The aspiring beekeeper needs to know that there are research results to substantiate the need for requeening regularly, feeding sucrose as needed, using white comb for honey production, culling

Continued on Next Page

Jaycox...Cont. from Page 704

old comb from the broodnest, controlling diseases and preparing colonies well for winter. With this information at hand, beekeeping is a challenge and an interesting hobby or avocation. Interest quickly lags if you only watch your bees fly from their box. When you are an active participant in the success of your colonies you are far less liable to neglect and eventually give them up.

Pesticides IN the Hive

Until recently, all our problems with pesticides arose from applications made by non-beekeepers to areas and crops outside our beehives. Now, with pressure building for controls for tracheal mites and the possibility that Varroa mites may become established in the United States, we are faced with applications of pesticides (acaricides, miticides) within the bee hive and with all the inherent difficulties of such treatments. These include losses of bees, harmful residues in wax and honey, resistant pests, and possible changes in consumers' attitudes toward honey, pollen, and royal jelly.

Examples of the problems of using pesticides in colonies of bees are becoming more commonplace in world beekeeping literature. One of the most serious was found in Austria when comb foundation was made from wax imported from Rumania. Queens quit laying and colonies were seriously damaged when they received frames with foundation made from the imported wax. When analyzed, the wax contained several pesticides toxic to bees that are used for the control of Varroa mites in Rumania.

In France, where the mite spread over the entire country in the four years from 1982 to 1986, beekeepers have had difficulty controlling the mites because brood is present yearround in the Mediterranean coastal areas where package bees are produced. Under those conditions. control agents kill only the mites on the adult bees, not those in sealed cells. Some beekeepers have treated their colonies 20 to 40 times yearly, in part because of the presence of sealed brood, but also because of poor management, according to Job Pichon in The Beekeepers Quarterly. He wonders whether those beekeepers are producing natural, pure honey or rather, a contaminated product. The control agent is currently Amitraz, applied as a hot aerosol at 40°C (105°F). Fluvalinate, a pyrethroid compound, is also widely used although it has not been approved.

Folbex VA has been the control agent of choice for both tracheal mites and Varroa mites for a long time in Europe. Also called bromopropylate, the compound is used to fumigate infested colonies with pesticide smoke. Four treatments are ordinarily required at a cost in Germany of US\$2.22 per application. Repeated treatments can leave increasing amounts of bropropylate in the wax of the combs. Consumption of cut comb honey from treated colonies is not advised. According to Judy Jolly in England, Ciba-Geigy will discontinue the sale of Folbex VA "from next year" when it will offer a new preparation called Apitol.

(Ed. Note: Preliminary work by U.S. Researchers has shown Apitol to be effective, easy to apply, safe for both adult and larva stages and have far fewer problems with wax contamination. It too is applied only in fall and spring. Costs were not available yet.)

Perezin, a two per cent aqueous solution of the insecticide Coumaphos, is a systemic treatment approved for Varroa control in the Federal Republic of Germany. It is used by dripping the solution into the colony where it is shared and distributed by the workers. Mites feeding on treated bees are killed. The material is fatsoluble and can readily contaminate combs but does so less than if it were used as a smoke. It is applied twice, but only in late autumn and winter when done correctly. A kit for treating five colonies costs about US\$29 in Germany. Bayer, producer of Perezin, warns against the sale of comb honey from colonies treated with their product.

How can we avoid the contamination of our colonies with pesticide products for the control of tracheal and Varroa mites, and what may be the consequences of our carelessness in their use? First, do everything possible to help speed up the testing and approval of effective materials. In three years, nothing has been made available for tracheal mite control. If Varroa becomes established (even in only part of) the United States, a delay of three years in approval of controls will cause losses to many beekeepers and drive them to use unapproved materials, regardless of whether or not they are effective and, perhaps, dangerous. Menthol may not be dangerous, but it is being used illegally, probably by the ton, for 'prevention" and "control" of tracheal mites.

Amitraz is NOT approved for control of Varroa in spite of a statement to the contrary by a midwestern newsletter. Because of the chemical nature of the compound and its danger when used near human food, even Germany has not approved its use. They have approved only formic acid, Perezin (Coumaphos) and Folbex VA.

When residues of mite-control materials are found in honey, all beekeepers will be forced to provide analyses showing freedom from contamination in order to sell their bulk honey. Beeswax will also be suspect. A similar situation has already taken place with residues of sulfathiazole in honey elsewhere. Analyses of honey and wax are costly and time-consuming.

The worst thing that can happen as a result of mite-control efforts is the loss of public faith in the goodness of honey. The National Honey Board has reported that honey users like honey because it is natural, and all of us emphasize that character when we talk about honey. Apple growers are still hurting from the public outcry about their use of the material Alar, a plant growth regulator. Some produce companies and large retail chain stores refuse to buy apples from orchards treated with Alar. You are probably aware also of what happened when watermelon growers contaminated their crop with an unapproved pesticide. And, because of illegal use of chemicals banned in the U.S. (DDT for instance), some people are beginning to think of labeling produce as to the country of origin. Consumer concerns over pesticide residues in all food is growing. Imagine how large consumers of honey may react when they learn that colonies of bees are treated 2 to 40 times each year with toxic chemicals. The response will be even stronger if the pesticides are not approved for that use!

Beekeepers have long fought against the misuse of pesticides in the field. Now you have a chance to show by both deeds and words that the industry can use pesticides responsibly within the bee hive. It will do no good to 'save the bees' and 'lose the honey market'.§





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24 THRU 49	\$ 1.40	\$16.80	50 THRU - (OUOTE)	25 THRU - (OUOTE)	50 THRU - (OLIOTE)
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Varroa CAN be licked . . .

By STEVE TABER of Honey Bee Genetics • P. O. Box 1672 • Vacaville, CA 95688

"Control has been shown with chemicals, resistance and intelligent regulations."

A shipment of package bees originating in a Florida operation heavily infested with the mite, Varroa jacobsoni, were distributed throughout the Midwest. The first of these mites were found in Wisconsin, where 21 of the 31 package colonies were found to be infested. The bees were destroyed.

Where did the original infestations come from in Florida? I don't know, and as of now it doesn't make any difference anyway. We now have the mite. Can we get rid of the mite? NO, no way. Why not? Many, if not all of the European governments and regulatory people tried to stop the spread of the mite across their respective countries with no success whatsoever. Many colonies were destroyed in the process — to no avail.

What can be done? Three things: 1) Immediate research in varoa mite chemical control methods and a big push for getting government approval of one or more of the miticides that we already know works on varroa from European research and experience. The varroa mite, left unchecked, will kill bee colonies infested, and all colonies in an apiary will become infested.

2) For long-term control, breed

bees that are resistant to the mite. So far, two mechanisms of resistance have been found; the first, shown by R. Moritz in Germany is that a shorter development time in the pupal stage of the worker bee effectively controls the mite. He did



Part of 6,000 dead mites that fell to the floor board of the hive 24 hours after an experimental varroa treatment at Oberursel.



this using African bees, comparing their infestation level with European bees. Roger Morse reports that his former student in Brazil, David deJong, rarely finds more than 3 mites per hundred workers, while on European bees in Brazil he usually finds from 50 to 100 mites per hundred workers. The second mechanism was discovered by C. Peng who works at the University of California, Davis. She did this work while on a sabbatical study tour in China. She found that certain workers were very adept at grooming themselves, thus finding any clinging mites and removing them. This grooming behavior can be selected for in a breeding program.

3) Call off the regulators and stop killing any bees. Why? It does no good and puts a beekeeper out of business faster than the mite will. As it has been explained to me by several European bee researcher friends who have worked on this problem, low levels of infestation *cannot* be found. So, when the mites are found in one colony, they have already infested more colonies. When there is only 1 or 2 mites in a colony, they simply cannot be detected.

Sensible regulation might slow the spread of the mite by restricting free movement of colonies from known infested areas into uninfested areas. This would permit free beekeeper movement from Florida into the Midwest, but not from the Midwest into Texas or into the far West. But stop killing bees NOW.

I visited the German laboratory near Frankfort (Oberursel) this summer and watched some of the research being done on Varroa mite. They have made excellent progress, and have so few mites in their bees that they now buy mite infested colonies to conduct their experiments. Can you imagine 6,000 dead mites after one 24-hour application?§

Root... Cont. from Page 701

experiments follow:

Hive Control		Terra-Brood		Toruteen 10		Prov	ity	Soyflour		
No.	Before	After	Before	After	Before	After	Before	After	Before	After
6	16.6	2.9	20.9	17.2	27.2	23.4	26.7	23.3	17.3	15.2
7	19.9	14.3	32.1	29.6	34.3	32.2	26.5	25.2	20.2	18.9
2	18.4	17.8	22.3	21.6	31.4	29.0	19.6	18.1	16.9	16.4
4	16.6	11.9	30.4	28.9	28.0	24.9	22.7	17.7	21.8	17.8
9	26.8	24.6	24.0	22.9	24.5	18.6	18.7	16.9	15.6	13.9
3	17.8	15.6	31.5	29.6	24.9	21.1	24.2	21.3	22.5	20.0
8	20.2	18.1	26.3	25.3	27.1	23.4	20.6	18.5	19.8	18.4
1	20.7	1.1	34.5	24.5	19.7	6.0	20.8	6.2	22.5	18.2
5	22.6	1.7	31.4	29.7	29.4	24.5	23.7	19.4	20.8	16.1
Sum:	179.6	108.0	253.4	229.3	246.5	203.1	203.5	166.6	177.4	154.9
Avg:	19.9	12.0	28.2	25.5	27.4	22.6	22.6	18.5	19.7	17.2

Experiment No. 2 - Home Yard

	Hive	Cont	rol	Prov	ity	T-Bro	bod	Soyfl	our	Whea	st	T-1	0	Wheas	t/Soy	
	No.	B	A	B	Å	B	A	B	A	B	A	B	A	B	A	_
	1	18.7	1.3	15.2	0.9	13.8	9.0	18.5	8.7	18.1	10.2	17.8	6.4	16.5	8.7	3-10
1	3	18.2	11.9	13.8	10.7	12.6	9.6	16.0	8.0	17.0	15.9	15.7	12.7	15.8	11.3	-
	4	18.9	0.6	12.0	0.7	17.0	6.0	18.2	2.6	19.7	15.4	11.9	1.2	13.2	0	-
	5	16.3	0.5	13.1	0.7	17.5	3.0	20.2	5.2	20.3	10.2	17.0	6.5	17.1	1.1	
	6	14.9	4.9	11.5	9.3	17.2	15.2	18.2	11.5	19.0	3.5	14.8	2.3	18.4	6.4	
	Sum:	87.0	19.2	65.6	22.3	78.1	42.8	91.1	36.0	94.1	55.2	77.2	29.1	81.0	27.5	- 1
1-	Avg:	11.4	3.8	13.1	4.5	15.6	8.6	18.2	7.2	18.6	11.0	15.4	5.8	16.2	6.9	-

We did not pursue this further, but the preferences are fairly obvious. However, preference does not necessarily mean quality food for brood production. Since all of these materials are similar in quality, but not identical, we suggest your own trials to determine brood production



Dry pollen supplement feeding test.

vs. preference.

Shortly after the second experiment, (early March) we discovered that some bees were very active



Moistened pollen supplement feeding test.

collecting sawdust/seeds, or anything they could pack in their pollen baskets. We decided to see if they would collect dry soy flour. So we put out measured amounts of some materials and found that they were VERY interested in powdery substances, *but not sugar crystals*. In fact, they literally dove into the powder and hovered, packing their baskets. The sugar crystals were too heavy to pack, so were left behind (especially true for the Wheast). Here are the results of these two experiments:

 Experiment Number 1 Before After Powdered Sugar 42.8 32.7 Provity 53.9 31.3 T-10 52.6 27.2 Soyflour 38.4 16.9 Wheast 73.9 73.0 Terra-Brood 62.0 62.3 Experiment Number 2 Before After **Powdered Sugar** 42.0 40.4 47.9 Provity 55.2 T-10 51.7 33.0 Soyflour 34.6 13.6 Wheast 68.9 45.9* Terra-Brood 64.1 50.9 Pollen 44.5 23.5

*Mostly sugar crystals left behind

December 1987

Continued on Page 722



In Auburn, Indiana, entrepreneur Greg Dickman is experimenting with wild bee nests of his own design. Manufactured for him to exact dimensions, the nests are angled to protect the bees from rain. Dickman is also hand-coloring the tubes to determine nesting preferences.

Torchio, Parker's colleague at the Logan laboratory. "With California almonds, it would take about 5 years of concerted effort by beekeepers and growers to boost current populations of wild Osmia cornuta bees — *imported from Spain* — to the 100 million needed to pollinate the entire U.S. almond crop."

Wild bees are also safer to work with than honey bees, says Torchio. Even if provoked to sting, the result is no worse than a mosquito bite.

"On the debit side," he says, "wild bees don't make honey."

But for farmers and orchardists, the ability to pollinate efficiently far outweighs the value of bees as honey producers. And many wild bees, while they typically pollinate only one or two crops, are superior to honey bees in the number of flowers visited and pollinated.

For example, only 250 blue orchard bees (Osmia lignaria) can pollinate a 1-acre apple orchard as effectively as 80,000 honey bees, according to Parker. Their pollinating, however, is limited to fruit and nut orchards.

The wild horn-faced bee (Osmia cornifrons), a recent import from Japan, has been used by orchardists in that country to pollinate apples and plums since 1940. One bee can pollinate 2,500 blossoms a day.

"We're just beginning to explore this source of pollinators," says Parker. It is estimated that wild bees account for some of the crop pollination in the United States as well as many wild flowers.

"The idea of raising wild bees as pollinators is not so much to replace the honey bee as to supplement it," says Torchio. Both honey bees and

USDA: Taming Those WILD BEES

By HOWARD SHERMAN • U.S. Dept. of Agriculture 800 Buchanan Street • Albany, CA 94710

• OF SOME 20,000 BEE SPECIES WORLDWIDE, ONLY one has been domesticated and put to work for man. That, according to a U.S. Department of Agriculture entomologist, is the honey bee, an insect that performs two major functions for us: it pollinates crops and makes honey.

But the honey bee (Apis mellifera) is rivaled as a pollinator by many wild bee species, says Frank D. Parker, who heads an Agricultural Research Service laboratory in Logan, Utah.

According to the ARS scientist, "another difference is that wild bees, unlike the honey bee, cannot mate with Africanized bees", which are expected to cross the border from Mexico into the United States in 1990.

Some wild bees could replace honey bees for pollinating specific crops, according to Phillip F.



wild bees can work side by side in the same field or orchard, but for some plants, a wild bee is more effective.

Torchio states that honey bees will be with us for a long time because they, along with wild bees, pollinate our food and fiber

Continued on Page 712

Stingless Bees: A Vanishing Art By DEWEY M. CARON



The narrow tube-like opening to a stingless bee nest (<u>Trigon</u>) maintained in a hollow log by a beekeeper in Panama.

The first American beekeepers were the Indians of Central and South America who kept stingless honey bees. Stingless bees are social, with large permanent colonies of workers and one queen. They are relatives of Apis mellifera, our common honey bee, but are classified in two different genera - Melipona and Trigona. Stingless bees can be found today in Southern Mexico southward to Argentina as well as in the tropics of Africa and Asia. They have never been in the U.S., apparently even when our climate was much warmer. And as their name indicates, these social female bees are stingless.

Stingless bees lack development of an ovipositor as a defensive weapon. They are the most common bee in the tropics and a major crop pollinator in tropical agriculture. As man continues to rapidly destroy tropical forests, the native habitat and vegetation of these bees is also being destroyed. Concurrently the introduction of Apis mellifera into the tropical environment, has lead to a rapid decline in the culture of these bees. While recently in Panama studying the Africanized bee I had an opportunity to visit a couple of stingless bee beekeepers.

As with our bee, people keep stingless bees for honey which is prized as a medicine. Some nests of *Melipona* may yield up to 5 lbs. of honey but most yield far less than 2 lbs. The honey, called Miel de Palo (vs miel de Abeas for honey from *Apis mellifera*), is higher in water content and often bitter in taste. It does not store well. It is very valuable to native healers who view this honey as different from the honey we know. It is used in treatment of people for a wide range of ailments.

Nesting Sites

The vast majority of stingless

bees nest in cavities. Smaller sized species use hollow tree trunks or hollow branches. Some larger *Trigona* nest in exposed locations building a tough multilayered nest in a tree. Other species modify abandoned termite nests. In cities and suburban areas they use masonry wall voids of houses and discarded debris and containers as nest sites. In the ruins of old Panama City, a large number of stingless bees nest in the many cavities in the ruins.

The hives used by stingless bee beekeepers are wooden containers. The bees seal all entry areas to one single entry tube that they can defend. One side of the cavity is removed to harvest their honey. Styrofoam containers would seem to be an acceptable substitute for most species kept by man but they haven't been widely utilized. Some nests are kept in the hollow trunks or branches the bees originally inhabited. Many nests are not moved from their original founding site — the beekeepers know each site and visits "his" nest to annually harvest honey, typically near the end of the dry season when yield is greatest. Such nest sites are closely guarded secrets to avoid discovery by anyone else.

Nests of stingless bees are made of wax mixed with resins (propolis) - a mixture called cerumen. Some species mix mud, vegetative material, dung and other materials in as well. The exposed nests are more likely to have more resins and other inclusions in the nest materials. As shown in the diagram, nests are enclosed by a Batumen that closes off cavities and serves as an insulation layer for exposed nests. The nest itself has 2 portions - one for storage of honey and pollen and another for brood combs. The brood area has a layered covering or involucrum. The brood cells are in horizontal comb which open upward.

Continued on Next Page



A diagram of a typical stingless bee (<u>Melipona</u>) in a hollow branch. (From Michener, 1974.)

USDA... Cont. from Page 710

crops, valued at \$20 billion a year. The honey made by honey bees is valued at between \$100 and \$150 million a year and beeswax, used to make candles, is worth \$15 to \$20 million a year.

Further, there is a thriving U.S. bee industry that can sell or rent honey bees to growers anyplace in the country.

"Many species are active only during a few weeks of the year when crops are blooming," he says. "The rest of the time they hibernate and can be easily stored, emerging when needed the following season." Some 85% of all bee species are not social but solitary. Each female mates independently and stocks her own egg cells with food. "In one year," says Parker, "wild

"In one year," says Parker, "wild bees can reproduce enough surviving new bees to double or triple their population. Near the end of her short life span, for example, the female blue orchard bee deposits about 30 eggs, along with 'loaves' made of nectar and pollen, into 3/8" holes drilled into blocks of wood by the orchard grower." Within a few days, the eggs hatch into larvae that, over the next few weeks, feed on the nectar and pollen. The larvae then enter a resting stage until late summer, when they metamorphose into sleeping adult bees.

Stingless...Cont. from Page 711

In the storage area some species mix pollen and nectar together while others have pots of different size for each food. Pollen storage cells are narrower and more cylindrical compared to honey storage cells. In most nests storage cells for honey are enlarged as the amount to be stored increases.

Brood cells are of two sizes with queens and males produced in the larger cells. Usually this is only during a portion of the year. Brood cells are mass provisioned and the cell sealed after the egg is laid by the queen. Often the wax is removed once the pupa has spun its cocoon. As in honey bees, the developing queen gets a richer and larger amount of food in her larval development. Mating of queen and male occurs near the entrance to the nest where males form large aggregations. Stingless bee queens mate only once in their lifetime.

Stingless —Yes Defenseless — No

Stingless bees do in fact lack functional stings but they are by no Other wild bees nest in the ground, in thatched roofs, hollow reeds, or in adobe nests.

"Commercial interest in wild bees is growing slowly," Parker reports. "We think there is a potential market for wild bees."

The new business is ideal for parttimers. According to Parker, "High school students, housewives, church groups and Boy Scouts have made money trapping and selling wild bees. For about \$5, they can buy nesting materials — boards drilled with holes the size of a bee's body and resell them — stocked with bees — to alfalfa growers."

He said, "All you do is stick bee boards on the side of your house and bees will nest in them"§



means defenseless. They occur in large colonies and store, in some cases, abundant pollen and nectar so they are attractive targets for predators including man. When disturbed a large portion of the population may rush out of the nest to bite an intruder. The bees crawl into the eyes, nose, ears and hair. This is very disconcerting and the action usually causes intruders, except for the most persistent honey collectors, to retreat.

A few stingless bees have evolved a further defense. Some *Trigona* are capable of producing a chemical from enlarged mandibular glands that is placed on the skin of intruders opened by bites. This is an extremely painful burning sensation and lesions develop at each bite site that last for many days and leave permanent scars. I earlier described an encounter beekeeper Bolivar Apiaricio had as a teenager with these stingless bees of which the scars were still evident, 10 years after the attack.

One of these stingless bees with chemical defense, *Trigona tataira* is called the fire bee by natives. I witnessed an attack of this bee on 2

adjacent honey bee colonies where they were robbing pollen traps. This bee also attacks and robs other bees nests in the tropics. An interesting finding about this chemical is that in addition to causing painful longlasting reactions in humans, it disrupts normal defensive behaviors of the honey bees. It is thought that this been can plunder other bees nests with impunity owing to the chemicals of their secretion. Other species seem also to use chemicals to repel more common enemies like ants, wasps and flies but are docile and easily robbed by humans.§

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Answers to **Testing Your** Beekeeping Knowledge

- 1. False. Raw or unprocessed honey often contains large amounts of pollen, however, during the bottling process in large packing plants the honey is run through a filter press and all particulate matter is removed. This process increases the shelf life of bottled honey since crystals must have some type of particle on which to form.
- 2. True. Pollen collection by colonies is greatly affected by the needs of the colony. Placing a pollen trap on a colony will increase the number of bees collecting pollen in the short term, as the colony tries to compensate for the reduced amount of pollen arriving into the brood nest.
- 3. True. Pollen is rich in protein, which serves as the building material for growth and tissue repair. The amount of protein in pollen from various floral sources, however, is by no means uniform and may range from approximately 7 to 35% protein. Some pollen sources lack in some of the essential nutrients required for brood production by honey bees. Since the food value of pollen from different sources is highly variable, a pollen mixture from several different sources is needed to provide all of the essential nutrients.
- 4. True. Honey bees collect water at all times of the year when weather conditions will allow them to fly and when there is not a heavy honey flow in progress. Water is temporarily stored in the hive in the honey stomachs of numerous bees of the colony. These reservoir bees remain quite inactive and stay close to the brood area. Water is also deposited on the top bars in small cell-like enclosures generally made of old wax and propolis. It is also deposited in the cells of burr comb and in the indentations of the brood cappings.
- 5. False. Osmosis is the process by which water and other fluids are transported through a porous membrane and would be the mechanism by which water is replaced in the nectar supply. The transportation of sugars, however, is dependent upon the

metabolic activity of the nectary tissue and several different metabolic pathways have been described.

- 6. True. Propolis has been shown to have antibiotic properties when it is mixed with hot water or alcohol. In the past, it was used extensively in medicine, particularly for the dressing of wounds.
- 7. True. Bees collecting either nectar or pollen from a plant which furnishes these materials only part of the day, will return to the hive when the food supply is exhausted. Most of these bees remain quietly in the hive for the remainder of the day. They do not respond to the dances of other bees which may have found other good food sources. Some individual foragers, however, learn to work two species of flowers at different times of the day as pollen and or nectar become available.
- 8. True. Even though older honey bees are capable of raising brood without consuming pollen, they do it at the expense of their own bodies and the amount of brood is rather small.
- 9. True. Not all honey bees are always faithful to a single flower species. Several studies have been made of pollen loads collected from returning foragers. From 1 to 10% of honey bees have been found with mixed pollen loads, usually from two different species, sometimes from several plant species. Those bees with mixed loads of pollen may be scouts. which are probably always exploring alternative sources of food.
- 10.True. Bees can only collect and use propolis when the temperature is high enough to make it pliable. Therefore, collection is favored on warm, dry days.
- 11.D) 4,500 bees
- 12.C) both nectar and pollen
- 13.A) nectar
- 14.B) pollen 15.C) both nectar and pollen
- 16.A pollen insert is a device that is placed in the hive entrance into which hand-collected pollen is placed. As the bees leave the hive and pass through the trap, some of the pollen adheres to their bodies and is carried to the blos-



som, resulting in cross-pollination. This technique is used in crops where there are not adequate supplies of compatible pollen to achieve desired levels of pollination.

- 17.Pollen identification is partially based on the color of the pollen pellets and most importantly on the ornate characteristics of the outer wall of the pollen grain (exine).
- 18.Some individuals have serious allergic reactions following the consumption of pollen and there is always the danger of pollen being contaminated with pesticides if pollen collection is done in agricultural areas or regions where pesticide applications are routinely made.

ANSWERS TO EXTRA CREDIT QUESTIONS

- 19.True. Mature pollen grains are the male gametophyte of the flowering plant, each grain containing a vegetative nucleus which controls the growth of the pollen tube and two nuclei which are the male gametes (sex cells) of the plant. One of these nuclei will join with and fertilize the egg nucleus in the ovary of the flower. 20.The pollen stored in the pollen
- baskets on the hind leg is first collected from the branched hairs of the body by the front and middle legs and deposited on the large flat brushes on the inner surface of the hind legs. During this process the front legs of the bee are moistened with nectar regurgitated from the honey stomach; this is mixed with the pollen and helps to stick the grains to each other. When the brushes are loaded with pollen, the hind leg on the one, side is rubbed against the other, forcing the pollen from the inner surface to the outer pollen basket on the opposite leg. A repetition of this process, first on one side, then the other, successfully packs more pollen into each basket.

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

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

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Results of Our 1987 Plastic Equipment Survey

By MICHAEL FERRACANE • Office of Apiculture Dept. of Entomology • Cornell University • Ithaca, NY 14850

Here are the results from the plastic survey that appeared in the January, 1987 issue of Bee Culture. To refresh your memories, the questionnaire asked readers to respond to a variety of questions about themselves and their experiences with any type of plastic beekeeping equipment they had used, listing the items, the length of time that they had been in service, and evaluating their perfor--mance on a scale from 1 to 4; 1 being poor, 2 fair, 3 good, and 4 excellent. Cumulative ratings for each product were then tabulated. The ratings of similar equipment made by different manufacturers were pooled and no attempt was made to rate the products of individual manufacturers. Eighty readers from 34 states and 2 Canadian provinces responded to the questionnaire.

The overall performance ratings for each of the plastic items on the questionnaire, with the exception of foundation, are summarized in Table One. From these ratings it is obvious that there is a wide disparity in the performances of different types of equipment. While some products seemed to receive unanimous praise, others were universally panned.

The Respondents

In order to analyze the responses meaningfully, I categorized beekeepers firstly, on the basis of the number of years they have been keeping bees and secondly, on the basis of the number of colonies they keep. The boundaries for each class were arbitrarily chosen. Forty-five of the respondents have been keeping bees for over ten years (very experienced): twenty-five have been keeping bees for five to ten years (moderately experienced); and ten have kept bees for less than five years (beginners). The majority of respondents, fortyeight, had twenty or less colonies (hobbyists); twenty-two had between twenty-one and two hundred colonies (sideliners); and ten had over two hundred colonies (commercial).

For the seventy-three respondents who have used plastic equipment (3 had not), the average number of plastic products tried was 6.6. The number of products tried ranged from a low of 1 to a high of 12. Based on the number of hives kept, sideliners had tried the most plastic products, averaging 7.1. Hobbyists tried an average of 5.4 products, while commercial beekeepers tried an average of 5.0. Not surprisingly, the longer a person has kept bees the more products on average they have tried; very experienced beekeepers tried 5.7 plastic products, moderately experienced beekeepers tried 5.4 and beginners tried 4.4.

Continued on Next Page

 Table One. Ratings of Plastic Equipment. Average ratings were only

 calculated for categories with greater than three responses.

Item	No.	No.	ofRespor	ises by R	ating	Avg.
Name	Using	Poor	Fair	Good	Excel.	Rating
1. Hive Bodies	19	4	4	3	8	2.8
2. Bottom Boards	29	5	9	7	8	2.6
3. Inner Cover	27	11	8	2	6	2.1
4. Outer Cover	28	1	0	6	21	3.7
5. Frames	7	1	2	2	2	2.7
6. Comb Honey Equip.	26	1	5	8	12	3.2
7. Feeders	35	2	9	9	15	3.1
8. Bee Escapes	27	2	6	13	6	2.9
9. Pails	48	2	2	14	30	3.5
10. Jars	27	1	5	8	13	3.2
11. Extractors	3	0	0	1	2	3.7
12. Honey Tanks	7	0	1	3	3	3.3
13. Excluders	15	10	2	2	1	1.6
14. Cut-Comb Boxes	4	1	0	2	1	2.8
15. Winter Covers	1	0	0	1	0	
16. Helmet	1	0	0	1	0	
17. Queen Cage	1	0	0	1	0	
18. Uncapping Tank	2	0	1	0	1	
19. Honey Gate	1	0	0	0	1	1 mar 1
20. Swarm Frames	1	1	0	0	0	-

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Table Two. Ratings of Plastic Foundation. Average ratings were only calculated for categories with greater than three responses.

					No.	of Res	Don	ses b	v R	ating						
Foundation		Pe	rfor	man	ce		Acc	epta	nce		Ext	tract	ting	Dura	bility	
Туре	1	2	3	4	Avg	1	2	3	4	Avg	1	2	3	4	Avg	
Solid Plastic																
waxed	0	1	1	1	3.0	1	0	3	2	3.0	0	1	1	1	3.0	
unwaxed	1	1	0	0		1	0	0	1		0	0	0	1		
combined	1	2	1	1	2.4	2	0	3	3	2.9	0	1	1	2	3.3	
One-Piece Fra	ame	and	Fou	ndat	tion											
waxed	4	5	4	7	2.7	5	5	10	7	2.7	0	4	7	13	3.4	
unwaxed	0	0	1	2	3.7	1	1	2	1	3.3	0	0	0	3	4.0	
combined	4	5	5	9	2.8	6	6	12	8	2.7	0	4	7	16	3.4	
Frame Portion																
Alone	6	9	6	11	2.7											
A. T. Garage																
Wax/Plastic													1 2 2			
Sandwich	1	6	3	7	2.9	1	8	14	6	2.9	1	1	11	10	3.3	

Foundation

Plastic foundation in one form or another was the most frequently tried item by beekeepers responding to the survey. Fifty-eight beekeepers have tried it in one or more forms. The overall responses to the performance of plastic foundation appear in Table Two. As expected there was a great deal of variation in how satisfied users were with it. While some people hated it, others loved it. One Tennessee beekeeper felt that plastic foundation makes wax foundation obsolete, while another beekeeper from Ontario, who is also a bee inspector, stated that what he has seen of plastic foundation while inspecting hives is the reason he doesn't use it himself. Perhaps the most common criticism raised for all types of plastic foundation is poor acceptance by the bees. In order to get any foundation drawn properly one needs a good honey flow. It would appear that this is especially true for plastic foundation. When placing it on a hive however, one need not worry as much about the timing as with wax foundation since the bees can't chew it in the same way. Many beekeepers prefer waxed to unwaxed plastic foundation in the belief that it improves acceptance. Some stated that they even put additional wax on the foundation themselves. Although the number of respondents using unwaxed foundation is admittedly small, from the responses there does not appear to be a significant difference in acceptance between the two types. Once bees had built comb on plastic foundation, several beekeepers believed that the bees preferred it to other combs for brood rearing. A number of beekeepers remarked on the beauty of a newly drawn plastic frame of all worker cells.

A few beekeepers who had tried the new solid plastic combs reported good results. The only reported problem with them was their high price tag and availability in only one size.

Solid plastic foundation was used by nine beekeepers. Five respondents rated the performance of this type of foundation, which averaged 2.4. Seven used waxed foundation while two used unwaxed foundation. The average acceptance level for both waxed and unwaxed foundation was 2.9. Four beekeepers extracted with combs made from this type of foundation and gave them an average rating of 3.3.

piece foundation/frame One units were tried by thirty-two beekeepers. Twenty-three of these gave performance ratings, which aver-aged 2.8 for waxed and unwaxed frames combined. Thirty-two bee-keepers evaluated the frames by themselves as 2.7. A number of beekeepers thought these one-piece units were great and used them exclusively. However, several beekeepers complained about the durability of the frames, claiming that they were subject to breaking. A beekeeper from Tennessee felt that the 9-1/8" frames flexed too much and sometimes warped out of shape, while one beekeeper from California and another from Idaho complained that they had to be particularly careful when prying the frames out of the super to avoid damage. Another frequently reported problem was the tendency of the bees to build excessive burr comb on the tops and sides of the frames, tying frames and supers together and making manipulations difficult. Acceptance of the foundation for both waxed and unwaxed averaged 2.7 for thirty-two respondents. Durability of the combs during extraction was rated as 3.4.

Thirty beekeepers had tried the type of foundation with a thin sheet of plastic sandwiched between two sheets of beeswax. Of these thirty, seventeen responded to the question on performance giving an average rating of 2.9. Most of the complaints about this type of foundation were about the tendency of bees not to repair damaged combs. Instead the bees tend to tear down the foundation to the plastic midrib. Twenty-nine beekeepers rated foundation acceptance by the bees. The average level of acceptance was 2.9. The twentythree beekeepers that used these combs for extracting gave them an average durability rating of 3.3.

Pails, Feeders, Escapes and Sections

Plastic pails were the next most tried piece of equipment. Forty-eight respondents have used them and gave them an average rating of 3.5, the second highest rating for any of the products. No one reported any real problems with them.

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Plastic ... Cont. from Page 716

Plastic feeders, such as the division board type, were tried by thirty-five beekeepers. They received an average rating of 3.1. The one critical comment about them, from a Missouri beekeeper, was that they tended to bulge out when filled. A beekeeper from Alabama believes that the new plastic division board feeders are vastly superior to the old wooden ones since they don't rot and hence seldom leak.

Bee escapes were tried by twentyseven people who gave them an average rating of 2.9. Many liked the fact that they didn't rust and were easier to clean than the metal ones.

Comb honey sections were well received by the twenty-six people who used them, receiving an average score of 3.2. Most liked them for their easy assembly as well as the ease of packaging the finished sections. One beekeeper from Alabama reported difficulty in getting the bees to work in the plastic sections. Another preferred the more traditional wooden sections but realized that the plastic sections are more easy to use and are immensely popular with the public.

Jars

Plastic jars received a score of 3.2 from the twenty-seven beekeepers who had tried them. While many preferred glass, the light weight and resistance to breaking of the plastic jars was a real selling point. One negative aspect of plastic jars, pointed out by a respondent from Illinois, is that they sometimes deform while heating them to liquify crystallized honey. Another Californian beekeeper felt that plastic wasn't as clear as glass and thus made the honey appear darker.

Bodies

There was a wide range of satisfaction with plastic hive parts. One, the outer cover, was praised by many of the twenty-eight beekeepers that used it for its good performance. It received an average score of 3.7, the highest rating of any product.

The other hive parts did not fare as well all for basically the same reason — they tend to warp. The inner cover was the worst culprit with most of its twenty-seven users rating it only a 1 or 2. Its average score was only 2.1. Many complained that it quickly sagged in the middle, squashing bees and forming a poor seal. While the new and improved version of this product attempts to prevent sagging by adding support ridges across the middle, one beekeeper from Oklahoma still found warping a problem. Another complaint was that plastic inner covers cause excess condensation of moisture above the winter cluster.

As with inner covers, the plastic bottom boards currently being sold also warp, tending to bow up in the middle. While a little warping does no harm, some beekeepers reported excessive warping, making insertion of entrance blocks difficult or impossible. Twenty-nine beekeepers rated the performance of bottom boards at 2.6.

Hive bodies did slightly better than inner covers or bottom boards with an average performance rating of 2.8 from nineteen beekeepers. Some complained that warping of the sides caused frames to fit poorly and cracks to form between supers. One beekeeper from Alabama found the hive walls to be too flexible while another from Kentucky found the lack of hand holds a real problem.

Other negative comments about plastic hive parts in general were that they were too slick and tended to slip and slide when new. On the flip side one beekeeper was quite happy with his plastic equipment and stated that he would advise all beginning beekeepers to start out with plastic hive equipment.

Excluders Poor

The product that received the lowest average rating of 1.6 was the plastic queen excluder. Fifteen beekeepers tried them and most rated their performance as poor. Numerous beekeepers complained that they are not durable and start to break apart within a short period of time.

Only a small number of respondents had tried other types of plastic beekeeping equipment. Seven beekeepers had tried plastic frames and gave them a rating of 2.7. While they are easy to assemble there were problems with lugs breaking off and hive tool damage. Seven had tried plastic honey tanks and liked then overall, giving them an average rating of 3.3. Three respondents, (two hobbyists and one sideliner), had tried plastic extractors (for 12, 6, and 1 year) and gave them an average rating of 3.7. Two beekeepers had tried plastic uncapping tanks, one rated them excellent (4) the other only fair (2). Four respondents had tried plastic cut comb boxes and gave them an average rating of 3.0.

Since plastic items are usually not known for their longevity, especially when exposed to the elements, the performance data was analyzed to determine if the ratings

of the various plastic products decreased significantly the longer they had been in service. Certain plastic items have been available for over fifteen years. However, no correlation between increasing length of service and performance could be found. One interpretation may be that problems with plastic equipment appear fairly quickly and do not get significantly worse over time. Alternatively, not enough time may have elapsed for problems to have appeared; at least for some items. A final possibility, and perhaps the most likely, is that problems with most plastic equipment do not occur in a predictable fashion, but are variable and dependent upon how and where the plastic items are used.

Summary

The overall results of this survey suggest that plastic beekeeping equipment, like equipment made from more traditional materials, has its own particular advantages and disadvantages. Whether or not a plastic beekeeping item is better than the non-plastic item it is replacing is a matter of personal opinion. Not all plastic equipment is created equal. Some products appear to be clearly better than others. Likewise, similar products from different manufacturers can vary in quality. If you are considering buying plastic equipment make your choice carefully. It would probably pay to talk to other beekeepers that have used it before and to read whatever reviews of the item you can find. Before buying a large quantity of any item try out a few first to see how well they work for you. If you have problems with a particular piece of equipment write the manufacturer to complain. It is only through such feedback that a manufacturer learns about the shortcomings of the product and makes changes. §







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News & Events

NEWS

ABF Honey Show Rules

The Honey Show for the 1988 American Beekeeping Federation Convention is scheduled for January 22-25, 1988, at the Wyndham Hotel Greenspoint, Houston, TX. For a copy of the rules write to the Chmn. Honey Show Committee, Charles B. Fisher, 4001 Old Springfield Rd., Vandalia, OH 45377; Frank Robinson, Secretary-Treasurer, American Beekeeping Federation, 13637 N. W. 39th Avenue, Gainesville, FL 32606; or to Ray Chancey, 401 Cherry Creek Rd., Dayton, TX 77535.

Exhibitors should be aware that trophies will be awarded in seven classes of extracted honey; three classes of comb honey; creamed honey; natural unbleached beeswax and molded beeswax. In addition, a Best of Show award will be presented.

Only members of the American Beekeeping Federation may participate.

Each entry must be accompanied by four (4) of the exhibitor's labels to identify the exhibitor and floral source. The entries will be sold at auction with the proceeds going to the American Honey Queen Program. This is a great way to help the Honey Queen Program, so please participate!

A completed entry form and the entry fee(s) must be mailed to reach the Honey Show Committee by January 11, 1988. Mail to: 1988 American Honey Show, American Beekeeping Federation, 13637 N. W. 39th Avenue, Gainesville, FL 32606.

If the entries are to be shipped instead of being brought with you, send to: Ray Chancey, 401 Cherry Creek Rd., Dayton, TX 77535.

Shipments must be received no later than Jan. 18, 1988.

Honey Board Activities

Honey is used by commercial manufacturers in products ranging from pharmaceutical items to baked goods. To protect, expand and develop the use of honey in manufactured products, the **National Honey Board** has hired Thomas J. Payne and Associates of San Francisco, a firm specializing in food technology and market development.

The National Honey Board selected Payne because of his firm's successful work in promoting California raisins and walnuts to food manufacturers both here in the. United States and abroad.

"Honey is a wonderful ingredient with a history as a manufacturing ingredient yet it has far to go to reach its potential," Payne said. "With the newly approved NHB market development program, the future for honey in food manufacturing looks very bright."

CSBA Initiates Research

The African honey bee (AHB) is predicted to reach Brownsville, TX as early as next year. Our only recourse is to learn as much as we can about this bee, and explore potential solutions.

Norm Waters, Chair of the Ag. Services Committee, and Willie Brown, Speaker of the Assembly, wrote to the University of CA expressing concern about the AHB and how the University of CA could assist in the problem. A meeting of representatives from the University of CA, CA Legislature, CSBA and the U.S.D.A. occurred last summer to discuss what actions should be taken. Another meeting was called by Norm Waters to discuss legislation to address the problem. This was attended by Beekeepers, Almond Growers, representatives of the CA Farm Bureau and the University of CA. Assembly Bill 3435 was introduced to fund AHB research in 1985, but was vetoed by Governor Deukmajian.

In 1987, working with various commodity groups, the CSBA was able to find matching funds. The CA African Bee Research Fund (ABRF) is the result of this alliance between industry, the state and federal government.

CA beekeepers have been assessed an additional three cents per colony to generate funds for the ABRF. Additional funds generated by other commodities will be matched by the CA Department of Food and Agriculture for up to \$50,000 annually. The USDA will also contribute \$50,000 to the fund. the goal is to obtain a total of \$150,000 annually for a five year period targeted specifically for AHB research.

Unprecedented support has been demonstrated by various commodities and government agencies to fund research into the potential solutions, to be used by beekeepers to minimize the negative impact the AHB may have on agriculture and the general public.

The University of CA will hire a Population Geneticist who will join the research team at U.C. Davis Bee Biology Facility to work on the genetic, behavioral, ecological and reproductive biology of the AHB. A candidate is expected to be chosen and working by the first of the year.

An African Bee Advisory Committee was formed to solicit additional commodity support and to focus on the needs and concerns of the industry to researchers.

The first meeting of the African Bee Advisory Committee took place September 16th in Sacramento. Representatives from all contributing University, commodities joined CDFA and USDA officials. The Commodities represented are honey bees, almonds, alfalfa, cherry, prune, plum, pear, citrus, kiwi fruit, melon, dried garlic and onion, avocado, the American Farm Bureau, California Farm Bureau and the Arkansas Farm Bureau. Three beekeepers - John Allred, Darrell Wenner and Timothy Lawrence — are representatives on the advisory committee.

AIA Annual Conference

The Apiary Inspectors of America will be holding their Annual Conference in Baltimore, MD on January 18-21, 1988 at the Baltimore Marriott Inner Harbor Hotel. The Meeting is open to anyone who wishes to attend. For further information and to obtain pre-registration material, contact I. Barton Smith, Jr. at the Maryland Department of Agriculture, 50 Harry S. Truman Parkway, Annapolis, MD, 21401, (301) 841-5920. Hotel reservations must be made by December 18 to obtain the conference room rate of \$47.50. Call the hotel direct at (800) 228-9290.

Featured speakers include

Continued on Next Page

Marion Ellis, Dr. James Tew, Phil Lima, Ann Harman, Gene Killion, Dr. H. Shimanuki and a host of other experts.

1988 AHPA Program

The following is the schedule for the AHPA Program on January 6, 1988.

- Wednesday, January 6
- 8:00 Get Acquainted Reception; Host, New Mexico Beekeepers Association
- Thursday, January 7
- 8:00 Registration
- 9:00 Bus Tour of Albuquerque 1/2 day 9:00 Call to Order, Richard Adee,
- 9:30 Pres. AHPA President's Address, Richard Adee
- 10:30 Dr. H. Shimanuki, Research Leader, Beltsville, MD, A.R.S. -Varroa Mite Research
- 11:15 Dr. Jim Tew, Federal Extension Apiarist, Wooster, OH, How Extension Can Help the Beekeeping Industry
- 1:15 Dr. Tom Rinderer, Research Leader, Baton Rouge, LA, The African Bee Barrier
- 2:00 Dr. Eric Erickson, Research Leader, Tucson, AZ, An Overview of Research at the Carl Hayden Lab
- 3:15 Dr. Gerald Loper, ARS-USDA, Tucson, AZ, Use of Radar to Document Honey Bee Flight
- 3:45 Dr. Bill Wilson, Res. Ldr., Weslaco, TX, Research at the Weslaco Lab
- 4:30 Mr. Bob Cox, ARS USDA, Weslaco, TX, Using Menthol Crystals for Tracheal Mite Control
- 8:00 A Picture Tour of Old Mexico Beekeeping, Dr. Joe Moffett, ARS -USDA, Weslaco, TX

Friday, January 8

- 9:00 All day tour of Old Sante Fe Town 9:00 Frederic L. Hoff, Economic Research Service, USDA, Economic Research Needs of Honey Industry
- 9:30 Jane Phillips, Honey Program Analysis, USDA, Washington, DC, The Honey Loan Program
- 10:30 Dan Hall, Manager; Mary Humann and Harry Rodenberg, National Honey Board, Longmont, CO, The National Honey Promotion Program
 11:30 Steve Censky, Exec. Asst. Ag.
- 11:30 Steve Censky, Exec. Asst. Ag. Marketing Serv, Washington, DC, Making the National Honey Promotion Program Operational 1:15 Resolutions
- 1:30 Tim Dadant, General Manager, Dadant & Sons, Hamilton, IL, The Role of the Bee Media in the Bee Industry
- 2:00 Kim Flottum, Editor, Bee Culture, Medina, OH, Beekeeper Relations with the Press
- 2:30 Eugene Killion, IL Chief Apiary Inspector, Bee Inspection at the

state Level

Saturday, January 9

- 9:00 TBA APHIS-USDA, Washington, DC, Regulating For the Varroa Mite
- 9:30 Dr. Joe Moffet, Weslaco, TX, How the Hoff Report Impacts Beekeeping
- 10:30 Dr. Roger Morse, Dept. of Ent., Cornell, Ithaca, NY, Mites and the Direction of Research in the US
- 11:00 Dr. E. W. Herbert, ARS USDA, Beltsville, MD, Chalk Brood - It's Control
- 11:30 Glenn Gibson, Chairman, Washington Legislative Com., Minco, OK, Washington Legislative Report
- 1:30 General Assembly Business Session
- 3:30 Business Session 1988 Board of Directors
- 7:00 Banquet, MC, Dr. James E. Tew, Wooster, OH; Speaker Mel Ustad, Legislative Assistant, Senator Larry Pressler, SD

★ INTERNATIONAL ★

Ontario Beekeepers' Association

The Ontario Beekeepers' Association will hold its Annual Convention on Friday, December 11-12 in Toronto at the Royal York Hotel. For more information contact Patricia A. Westlake, R. R. 3, Bayfield, Ontario, NOM 1GO, (519) 565-2622.

Friday, December 11

- 8:30 Registration
- 9:00 Welcome & President's Report Appointment of Committees
- 9:15 Canadian Honey Council Report 9:30 US Mexican Co-Op Program on Africanized Bees, Dr. H. Shimanuki, US Department of Agriculture, Beneficial Insects
- Laboratory 10:10 Irradiation of Beekeeping Equipment, Mr. Thomas J. Stephan, Isomedix
- 10:50 Question and Answer Period relating to Irradiation
- 11:10 First Reading of Resolutions 11:40 Nomination of Directors,
- Introduction of Nominees 1:30 Election of Directors
- 1:45 Question Period relating to reports handed out
- 2:00 Business Session
- 6:30 Reception
- 7:00 Dinner; Presentation, Mrs. Shimanuki; Painting Auction; Presentation of Honey Competition Awards; Recognition of Beekeeper of the Year Award
- Saturday, December 12
- 8:30 Registration
- 9:00 Parasitic Bee Mites in the US, Dr. H. Shimanuki
- 9:30 Promotions Report on Market Research Study
- 9:45 Positive Ways to Deal with the Media, Kim Flottum, Editor, Bee

Culture, The A. I. Root Co.

- 10:15 Provincial Apiculture Report, Doug McRory
- 11:00 Should You Be Using a Computer., Linda Gilbert, Basic Statement Computer Bookkeeping Service
- 1:25 Appreciation to Royal York Hotel 1:30 Review of New Crop Insurance
- Program, Greg Browne, Ontario Ministry of Ag & Food 2:00 Price Stabilization, Susan Colin
- 2:45 Marketing Shared Cost Program, OMAF
- Program, OMAF 3:15 Bee Labs & the USDA, Bee Research Programs in the US, Dr. H. Shimanuki

* COLORADO *

The **Colorado Beekeepers** Association will hold its' winter meeting in Glenwood Springs, CO, on Saturday and Sunday, December 5th and 6th, 1987. A review of the status of the Honey Bee Mites, the Africanized Bee, Honey Promotion and Hive Management Techniques will be included in the program. Guest speakers include Mary Humann of the National Honey Board. All beekeepers are welcome to attend. Questions concerning the meeting or accommodations may be directed to Guy Lee at (303) 634-5188.

* MAINE *

September was a lucky month for two beekeepers who had honey booths at two agricultural fairs. Bob Egan of Skowhegan won first place for this honey booth at the "Common Ground Fair" which took place in Windsor. Bob not only displayed his honey artistically, he also piqued his customers interest by serving three flavors of Maine Honey native to his area; Raspberry, Blueberry and Wildflower. "If you would like to try a taste of honey line up your fingers" Bob and his many volunteers would say. A lot of his success is being there to talk to customers and explain the importance of the honey bee in the food chain. Not only does Bob ask adults to help out at his booth he also includes the youth. What better way to prep our future beekeepers than to have them gain hands on experience, not only with bees but also by dealing with the public. Not any easy feat!

A secret of success at the honey booth is to make it appealing to the viewer. Bob used flowers, posters, bumper stickers and honey signs to make a colorful display. Back to the basics is the theme of this fair which is unique to our area. Great job Bob! The MSBA appreciates your hard

Continued on Next Page

work and loyalty to publicize the need and importance of the honey bee and our organization.

Stan and Helen Brown of Cumberland also had a successful week at the Cumberland Fair. Their theme was "A Salute to the Constitution" no, the honey wasn't Red, White and Blue, but flags adorned the booth while honey cases were lined in those patriotic colors. Now you know why the blue ribbon was a perfect prize for this booth. Long-time fair exhibitors. the Browns talked to the interested onlookers while explaining how the honey bees could find their way up a plastic tube to the outside and know how to return without a compass. The observation hive has always been the draw for those who like to look but not touch.



Honey candy was used this year as samples instead of just the wildflower honey also squeezed on fingers as used in previous years. Not only does the Colonel have as finger licking good product, so do honey bees.

* MINNESOTA *

The Minnesota Honey Producers will hold their 1987 Winter Meeting, Friday and Saturday, December 4th and 5th, at the American Inn in St. Cloud, MN.

Friday evening will feature the Market and Crop Meeting, starting at 7:30 p.m. and followed by a social hour.

Saturday will have morning and afternoon speakers, dealer displays and good conversation. Saturday evening will be the popular Banquet and Queen Coronation. Everyone is invited as we always have an excellent meeting and a good time.

*** NEW JERSEY** *

The North West New Jersey Beekeepers Association will sponsor a two-part program on the home uses of honey and the making of beeswax candles on Saturday, Dec. 5 at the Belvidere Court House in Belvidere, NJ beginning at 8 p.m.

Marnie Berthold will present her illustrated program on home uses of honey with special emphasis on baking.

Dr. Robert Berthold, Beekeeping Specialist at Delaware Valley College in Doylestown, PA, will present a workshop/slide presentation dealing with uses of beeswax, in particular for candlemaking. His comments will also include other types of candle waxes.

The program, presented at the start of the holiday season, will provide information for craft and entertainment ideas.

There is no charge for the program which is open to the public. For further information, contact Gary Bradshaw, RD #2, Box 173, Stockton, NJ, (201) 996-6331.

\star NEW MEXICO \star

All Beekeepers are invited to attend the New Mexico Beekeepers Association's annual convention, December 4th and 5th at the Albuquerque Hilton Inn located at 1901 University Blvd. N.E. An international line-up of speakers, equipment displays, door prizes and outstanding New Mexico hospitality will make this meeting fulfilling and enjoyable to the hobbyist as well as the commercial beekeeper.

For further information contact Rick or Betty Cole, 600 N. Bosque Loop, Bosque Farms, N.M. 87068 or call (505) 869-2841.

*** NEW YORK ***

All are welcome to the 119th Annual Winter Meeting of the **Empire State Honey Producers** Association, December 4th and 5th, 1987 at the Quality Inn North (formerly Syracuse Hilton Inn) in North Syracuse, NY, Thruway exit 36 at Interstate 81. Registration starts at 9:15 a.m., Friday, December 4th.

The program includes speakers on the economics of the U.S. beekeeping industry, the National Honey Board, the use of menthol, prevention of bee disease, and other aspects of beekeeping, plus a honey show, banquet, presentation of the NY Beekeeper of the Year award, and exhibits and displays. For more information call the Office of Apiculture at Cornell University, (607) 255-5443.

\star NORTH DAKOTA \star

Shelly Reiger, Bowman, ND, was chosen as the 1987 North Dakota Honey Queen. Miss Reiger has been involved with the beekeeping



industry since 1985 and in 1986 she was the Southwestern ND Honey Princess. During her reign as Queen she has been very busy doing promotions at the Valley City Winter Show, the ND State Fair, many country fairs, parades and conventions. She also represented the State and the Industry in August at the Yellowstone County Fair, Billings, Montana. Shelly was sponsored by Sparky's Super Bees, Bowman, ND.

*** TEXAS** *



Shiryl Donahoo is the 22 year old daughter of Wendell and Margie Donahoo. She lives in Lubbock, Texas where she is a senior marketing major at Texas Tech University. She has presented programs on all aspects of the honey and beekeeping industries. She has also done television, radio and newspaper interviews to promote the use of honey. Shiryl is looking forward to meeting beekeepers from all over the United States at the American Beekeeping Federation Convention in Houston, TX.

* UTAH *

The annual Utah Beekeepers Convention will be held in Salt Lake City, Utah on December 4th and 5th. The convention will be held in the Utah State Agriculture Building, 350 North Redwood Road. Stephen E. Stoddard will preside.

A banquet will be held in the same location on Friday at 7:00 p.m. During the afternoon session, a Honey Tasteing Party will be held for conference attendees, Utah State Agricultural employees and the public.

For further information contact William R. Jones, (801) 262-6079 or (801) 355-2033.

Root...Cont. from Page 709



Daily temperatures, precipitation and corresponding colony weights.

Observation Hive

We reviewed a copy of instructions and the model type for a new observation hive made by the Woodrough Co. This is a better constructed piece of equipment than other similar hives available, and seems more substantial, especially for schools. Bee were installed into this and although there are only three shallow frames and we had to feed all the time, the bees did quite well.§

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THE NEW ZEALAND BEEKEEPER. Quarterly magazine published by the National Beekeeper's Association of New Zealand. Editorial policy emphasizes practical beekeeping, latest research and feature articles with large format and many illustrations. Australia and South Pacific - US\$12 Airmail, US\$10 Surface; North America & Asia, excluding Middle East - US\$14 Airmail, US\$10 Surface; South America & Europe and Middle East - US\$15 Airmail, US\$10 Surface. Magazine produced March, June, September & December. Subscribers should indicate whether they wish airmail or surface mail. N Z BEEKEEPER, P. O. Box 4048, Wellington, New Zealand.

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Hint of the Month

When you give a gift of your honey or homemade treats give some recipes, too. Many state and local organizations and Honey Queens have attractive leaflets with a useful assortment of recipes. Since nonbeekeepers do not usually have access to these folders, they will appreciate receiving suggestions for using honey. If you have a favorite recipe that you would like to share, copy it on a file card and include it with your gift of honey. The recipes do not have to be for cookies and cakes. Meats and vegetables are prepared every day honey recipes for those two will certainly be appreciated.§



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