SEPT '91

GLEANINGS IN

BEE CULTURE

INSIDE

CELEBRATE SEPTEMBER • NATIONAL HONEY MONTH •

CELEBRATE

NATIONAL HONEY MONTH

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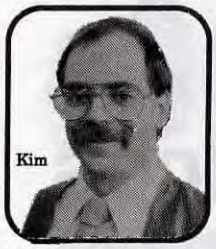

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Columns

Departments

COVER... Alsike clover is a premier honey plant, and has been for years. Grow Your Own, *which starts on page 491 explores the best honey plants you can grow without lots of expensive equipment and bushels of money.*

This painting, by Orien A. Frazier, has graced several National Honey Board publications in the past and they have generously loaned it to us as a reminder that September is National Honey Month. Celebrate! (And Promote!)

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(ISSN 0017-114X) Vol. 119, No. 9

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Features

INNER·COVER

National Honey (Maker) Month

Most of us tend bees for a variety of reasons – but it usually boils down to the bees or the honey they produce. There's a fascination, even a fantasy with honey bees that compels some of us to just stop, look and listen. And, if all else in the world melted down and went away, the drive and the passion to light smokers, lift frames, smell bees ... and just be beekeepers would keep on keepin' on.

But honey. Honey is an altogether different passion. One that serves as a goal that makes your mouth water, your kitchen messy and your spouse crazy.

Honey can get you out in the world to meet people you never thought you'd get to know. You'll find grocery store managers and dairy farmers, truck drivers and honey packers, glass brokers and government officials of every bureaucratic mode. Honey will raise your fascination and fantasy out of a super and into the world of business and sales, of labels and marketing, of delivery schedules and credit checks and lots of real and hard financial facts and figures.

Honey is a wondrous and wonderful product. It's also heavy, sticky, expensive, inconsistent, unpredictable, difficult to manage, impossible to predict and the best business you can be in if you like the silence and solitude of a beeyard in the woods.

And of course this is National Honey Month. Declared so by the powers that be, and those that should be, and it is dedicated to honey bees and the product they ambitiously produce and we so carefully culture and protect.

But it is also for those who help and harvest and heft and hope for the season to be the best it can be. It is for those who are quiet and silent and stand in the back. It is for those whose passion is simply making honey, and keeping bees.

National Honey Month is not for honoring the honey bee, not for the pollination of food and fiber, not for any of these. National Honey Month is for those who make sure the honey we honor is here when we want. National Honey Month is for those who make honey.

At least it should be.

Kim Flottum

Reader Assistance

To subscribe, simply fill in the form below and enjoy the exciting features awaiting you this year — Insurance Regulations, Smoker How-To, Requeening Tips, Inspections, Feeding, Pesticide Protection, and Wintering. It's all here — every month!

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NEXT MONTH

October brings all things autumn, and the first hints of winter, but for beekeepers it means shifting gears, changing focus, and maybe, just maybe, slowing down a bit from the harvest rush.

Next month we have an eclectic collection of fun, facts and information.

Starting with the second half of Grow Your Own How-To, and take a look at fall plantings, frost seeding, equipment needed and all the rest. Yes, you can grow your own!

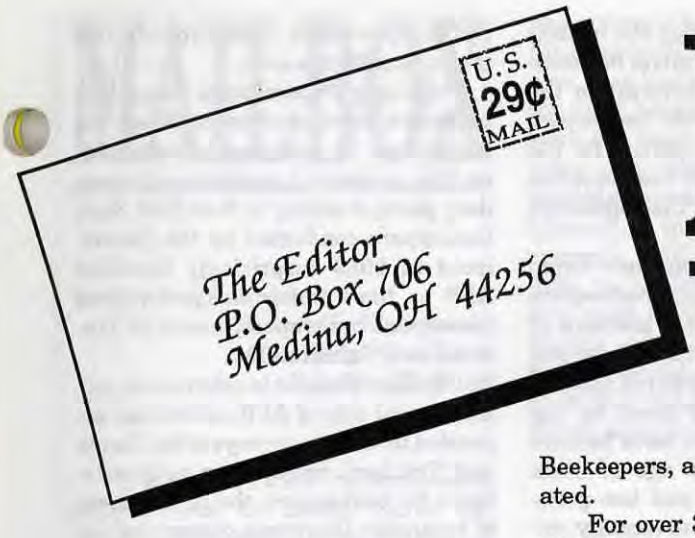
Many start thinking of next year already, and making frames, (and putting in foundation) is always a chore. O.B. Wiser takes a long, hard look at foundation, wiring and all the little known (and well known) facts on the subject. He makes some interesting observations – that you've NEVER read in a beekeeping magazine before.

A short trip south of the border explores how one Mexican beekeeper copes with limited access to supplies and equipment, and still does a professional job. If you like gadgets, you'll love this.

State Inspectors are often (but certainly not always!) desk jockeys, with limited field time available. But Next Month we'll visit with New Mexico's State Inspector, and *she* does a lot of looking, and listening to beekeepers.

But there's more. A profile of a commercial operation out west, a hobby beekeeper out east and a honey plant that grows nearly everywhere. Plus, the regulars will be here, too – Richard Taylor, Roger Morse, Dewey Caron, the Mail Box, our New! Improved! Honey Report (actually, we added a lot of reporters awhile back and the numbers are even better than ever!).

Next Month, all this and more! □



MAILBOX

■ Inspection Question

Editor's Note: Last May I requested comments from readers regarding the future of Inspection Programs in the U.S. With revenues decreasing rapidly many states consider colony inspections an expendable line item in their budgets. Some, in fact, already have ended those programs. Others are aiming at supporting inspections from user-fees, or other non-tax related revenue.

Below are some of the replies we received, and are representative of the opinions expressed.

Generally, beekeepers would like to see less regulation (and *none* from the Federal level), and would (might) be willing to pay for the services performed.

Inspectors who expressed opinions were generally reluctant to be identified, but the overwhelming concensus from their side was "If you (beekeepers) want it to be different, get the laws changed. We're not persecutors, but are doing the job beekeepers want done."

We would still like to hear more on this issue because it isn't over yet, and there are Federal folks who want some say in colony inspections at the state level (or, is it local beekeepers who want Federal involvement?). Let's hear from you.

•

Your "Inner Cover" column (re: bee inspection service) in the May 1991 edition of *Bee Culture* was very timely.

For over 80 years, the NJ Dept. of Agriculture in New Jersey provided "free bee inspection services" to NJ Beekeepers, and it was much appreciated.

For over 30 years, we have had a three-man bee inspection team. However, on April 1, 1990, with the retirement of J.C. Matthenius, Jr., the Dept. of Agriculture chose not to fill the position of State Apiarist, and we have had a two-man bee inspection team, extremely busy – but never the less, doing a fine job.

As a budget-cutting measure, our Governor (James Florio), and his advisors are proposing to eliminate the bee inspection service – entirely, effective July 1.

Our Governor has stated that he would not eliminate "necessary services" but apparently, he and his advisors do not understand the value of honey bees and their pollination of agricultural and horticultural crops.

We have been protesting this "ill advised, cost-cutting measure", and hope somehow to make these officials see the light.

Those who would eliminate bee inspection entirely – do not understand the consequences, or the devastating affects this act would have on the agricultural/horticultural crops and the beekeeping industry, statewide and nationwide.

As you know, bee inspection is a very necessary service, with bee inspectors serving as:

1) Health inspectors

2) Policemen, with legal trespass, and

3) Enforcers

Many states and governmental agencies are complaining of budget crisis problems. I truly feel we have reached the point whereby:

1) Bee inspection is a MUST, and;

2) Those who want bee inspection, should be entitled to have it, and if necessary, pay for it.

As you, know, Tracheal mites are in all states, and Varroa mites are in at least 34 states. With the arrival of the Africanized honey bees into Texas – it is imperative that we now see the light, and if necessary, "begin to pay our way" for bee inspection service – if we are going to have any at all.

Liz Rodrigues
Colts Neck, NJ

Editor's Note: NJ managed to keep their inspection program, at least for this year.

•

Let's keep Bee Inspection at the lowest possible level. Any time State or Federal governments get their hands on anything it gets messed up.

Charlie Henry
Bainbridge, OH

•

No regulation benefits any beekeeper at any level, all regulations should be abolished, Federal, State and County. If any beekeeper thinks he or she is having any benefit what-so-ever from any regulation they are dreaming. There is no history of regulation and intense inspection eliminating AFB in any state. During years prior to 1965 when beekeepers had learned how to control disease, stiff inspection was a good idea, now a bad one.

AFB and EFB cannot be transmitted by packages or swarms, chalkbrood can.

If I lived in an area where varroa had not been found in a 100 mile radius from my apiaries, I would buy packages and queens from only those producers who used the apistan tabs.

What is needed is more education on how to control diseases by proper usage of drugs and resistant stock. If people think that regulations and inspections do any good, let them provide some evidence. If a beekeeper neighbor

Continued on Next Page

MAILBOX

has all 50 of his hives die from AFB and I live 100 yards away, or any other beekeeper, the wax moth will eliminate the disease. And if any disease shows up in my stock I will requeen with resistant stock and feed TM.

Steve Taber
Goudous, France

•

Bee inspection should be kept on a state basis because if it comes out of Washington it will be no better than most of their messes.

A hobby beekeeper shouldn't have to pay more than $3.00 or $4.00 per hive to get the job done.

Joe W. Anderson
Scottville, MI 49454

•

Your May editorial brought the issue of state regulation of beekeeping before the court of public opinion at an opportune time. Apiary inspection programs are in need of review, not only because of their economic cost but also because of the perceived incompetence of state regulators.

All regulatory programs have overhead expenses which are borne either by the regulated industry or by the taxpaying public. If regulation is for the health, safety and welfare of the general public, then the cost should be spread across the body politic equally. When, as in the case of the beekeeping industry, only a small portion of society derives a benefit from regulation, the industry should bear the cost of regulation. Regulatory costs can be recovered from the industry either through a designated tax or user fees, both of which can be graduated to suit industry needs.

Another problem with apiary inspection programs is the perceived bureaucratic incompetence of government regulators. Current inspection programs tend to be administered at the central office level by personnel with little, if any, expertise in beekeeping. At the field level they are usually manned by quasi-commercial beekeepers with an economic interest in the industry, or by part-time beekeepers without training and expertise for the job. These bureaucratic inadequacies create friction between the regulators and the regulated.

Regulatory problems are especially acute for interstate beekeepers who must contend with a plethora of state laws. Many state apiary laws are relics of a bygone era and do not address the problems currently faced by the industry. State bee laws have become an anachronism in the age of mass transportation of bees and bee parasites and should be universally repealed.

It is time to evaluate the need for state regulation of beekeeping. State programs failed to detect either the tracheal or varroa mites until they were too widespread to be contained within a single geographic area. It is unlikely that state programs, as they currently exist, will fare much better in controlling the spread of Africanized bees.

I believe that the time has come for the abolition of state bee laws and apiary inspection programs. If inspection services are necessary for novice/sideline beekeepers, then there are people in the industry who can fill the void left by the regulators. They can probably provide inspection services in a more competitive, cost effective manner than state employees.

Beekeepers must become activists for either the reform or repeal of state apiary laws. Inaction by the industry will result in regulation by administrative fiat, rather than government by popular consent.

I look forward to further discussions on the subject.

Michael D. Mitchell
Providence, RI

•

A few comments regarding Richard Taylor's article, "Have Inspection Programs Outlived Their Usefulness?", appearing in the July issue of *Bee Culture*.

If the majority of beekeepers would invest the time necessary to enable them to recognize the various pest complexes of honey bees and would properly implement (approved) recommended control strategies, the need for state inspection activities could be significantly reduced. Unfortunately, this is not usually the case.

Although most state inspection programs have evolved to reflect the importance of new pest introductions and the occasional prevalence of secondary pests, a survey of New York State beekeepers conducted by the Department in 1989 surprisingly identified AFB as the number one pest related concern of beekeepers, ahead of Tracheal and Varroa mites.

In New York, as in other states, our traditional role of AFB control has expanded to include surveys of the Varroa and Tracheal mites, diagnostic assistance for beekeepers, the development of extension literature concerning the identification and control of honey bee pests, participation at club and association meetings, certification for the interstate movement of honey bee colonies, oversight of Apistan applications as required by state and federal law, and the procurement of "registered" chemicals for honey bee pest control, etc.

Most states recognize that pests of honey bees are not likely candidates for eradication and that there are in existence recommended controls for most. The problem lies in the implementation of a control or lack thereof; on a control and/or preventative basis.

There exists a problem in achieving the required level of commitment from the individual beekeeper in regards to pest management that would collectively result in a pest free climate for beekeeping and the reduced need for inspection. After all, most inspection programs were established with the intent of preserving an "agribusiness climate", protecting good beekeepers from bad.

Last, I think Mr. Taylor's article reflects a problem not unique to New York. Communication and a better understanding of the relationship between beekeepers and government is needed.

Robert J. Mungari
Albany, NY

■ Looking For Help

I would like to learn more about Instrumental Insemination of queen bees. I have Dr. Laidlaw's book on the subject at this time.

Would you know of any other books on this topic?

I would appreciate any informa-

MAILBOX

tion you could send.

Thomas B. Ewertowski
6204 Ridgeview Drive
Huntley, IL 60142

The article in the June issue called *Dragon Flies,* by Dewey Caron describes a method of keeping mice out of a beehive by using hardware cloth with a 3/8" mesh.

I have tried to buy some of this material from the local hardware stores and find it is not available from them. I then wrote the manufacturer of what they do sell (that is 1/4" and 1/2") mesh and got a call from them they don't make it. They explained that the two manufacturers of hardware cloth in the U.S. do not make 3/8" However it was thought that some small company may still be making it.

Can you please tell me where Mr. Dewey Caron gets his? Maybe I can get a piece 18" x 10' or so to serve my purpose from the same source.

Robert E. Gleason
512 Oak St.
Libertyville, IL 60048

Readers: Anybody have 3/8"? Local stores tell the same story.

■ Splits for Spring & Fall

In the May Mailbox a reader asked how to select hives for splits and raising queens. There are a few basics that will help. Make splits from very strong hives which are about to swarm. Check for developing queen cells and split hives by making shook swarms out of any which have large larvae in the queen cells. To split for increase in the fall, divide the bees and brood of a strong colony in half and give a new queen to the queenless half. Be careful, fall splits may not make it through the winter.

To select queens for breeding,the hobbyist must pay attention to the same basics a commercial breeder uses. My recommendation is if you have only two or three colonies, then it isn't worth the trouble. With more than three colonies, keep track of which colonies make the most honey, swarm the least, and show the least signs of disease. Avoid using only one queen as a source of grafting larvae because that means inbreeding in years to come. As an example, with 20 colonies to select from, try to pick the three best colonies and graft from each of the breeders. Finally, get a copy of Brother Adam's book *Breeding the Honey Bee* and pay particular attention to the characteristics to select for.

D. Jones

■ Auto-Matically Melted

In response to Don Kirchant's article *Build A Solar Honey Melter*, I have to recommend my even simpler solution.

I put honey in the hatch of my car on a hot sunny day. One day for jars and maybe a week for 60 lb. cans. My only warning is to not have your jars overfilled because the honey expands as it heats.

Ike Kerschner
Lancaster, PA

■ Cough Drops, Grease Patties or What?

In response to the letter by L. Edwin Rybak in the July issue of *Bee Culture*. The Bee Inspector checked my bees for mites during the summer of '89 and in the month of January. I received a notice I had mites and being January, was to late to do anything about it.

I really didn't believe it as I had one of my better honey years, but come April I had a 50% loss, so in 1990 I started feeding my bees two cough drops each (in August after the honey flow). The cough drops I used were Halls Ice Blue and I fed two to each colony till September. When I wrapped my colonies, I also fed half my bees with a powdered sugar and Crisco mix and come the spring of 1991 I came out with 100% living colonies. I had 45 in all.

Usually I figure about 10 dead colonies as the winters in our area (Northern MN) are long and cold.

Just thought you'd be interested.

Gernase Bauer
Carlton, MN

MAILBOX

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Carlton, MN

Guest Editorial

The free-trading policy-makers that inhabit the Washington Beltway will be unusually busy during the coming months with a well-oiled campaign touting the great value of a finalized Uruguay Round. Questionable theories will be given a save-American-jobs status. Policy-makers will be wearing their Adam Smith ties while they make speeches and write articles about the dangers of trade wars, and what a fine thing it is that we have an opportunity to buy foreign goods.

How many policy-makers have bothered to read Adam Smith's book, *The Wealth of Nations*? 'Tis a dull book written by a British subject during the Revolutionary War days. (The book's philosophy didn't exactly agree with the wording in the Declaration of Independence.) As a British subject in 1776, this father of laizzez-faire wrote an excellent book that would justify King George's tyrannical attitude toward the American colonies.

How many of our policy makers have studied the free-trade attitudes of George Washington and the people in his Administration? A cursory look reveals a fierce protectionist policy that continued to shape this country's trade policy until World War I. Instead of evoking Smith's ideas, we should be giving serious consideration to the statements of Washington, Hamilton, Jefferson and a host of early American patriots.

Some writers say that Smith's "hands off" philosophy was based mainly that he didn't feel governments were qualified to handle the job. Peter Drucker writes in his book, *The New Realities*:

"Smith had little love for business and even less for self-interest. He did not argue that government does a poor job running the economy. He argued that government, by its very nature, *cannot* run the economy, not even poorly. Smith argued from the nature of government. The nineteenth century argued politics."

I feel that it is important to note that free traders, who swallow the hypocritical trading philosophy of Adam Smith, should review a bit of history at the same time. William J. Gill in his book, *Trade Wars Against America*, wrote:

"Smith, the inventor of free trade, apparently had his hands in the statues that stiffened Customs enforcement in America, placing heavy import duties on a wide range of items ... Thus, from its inception in the agile but erratic mind of Adam Smith, free trade was a one-way street intended to benefit one country at the expense of another, or even all others."

Before the outbreak of the Revolutionary War the trade imbalance with England was horrendous: we bought eight times as much from Great Britain as they imported from us. Unlike Gill, modern historians, policy-makers and journalists have ignored the role played by the British trade policy in igniting the American Revolution. Today's policy-makers never tire of referring to the very correct attitude of the Founding Fathers's patriotism, but, seemingly fail to give them any credit for having much economic savvy. Our free trade policy seems to be: give our business to foreigners – free of charge.

Would a common sense protectionist program work today? Certainly – ask the Japanese and a host of our trading partners. It works for our domestic sugar producers. Ask the Washington Beltway policy-makers. For some reason or other we have had some kind of protection for sugar for 200 years. George Orwell in his book *Animal Farm* explains the justification for playing favorites – "everybody is equal under the law, except some are more equal than others."

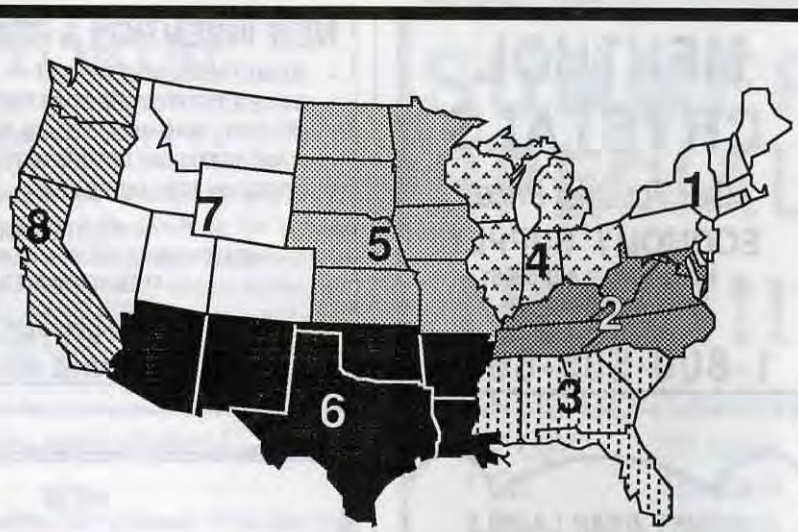
Can a small industry like ours get import protection? Certainly. The catch here is that Congress does not understand the pollination story about the $6 billion benefit to agriculture. Each beekeeper, large or small, can do hisor bit; but the big problem here is convincing them it needs to be done. With a number of othersthis would do the trick. Not having information that would be needed in a letter to one's congressman is not a good excuse. Any body that is smart enough to master the secrets of the beehive is smart enough to write a congressman.

Glen Gibson

SEPTEMBER Honey Report

September 1, 1991

REPORT FEATURES SUMMARY: Prices shown are averages from many reporters living in a region. They reflect a region's general direction. The range lists highest and lowest prices received across all regions.



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Extracted												
60 # Wh.	47.20	39.50	42.37	34.00	44.40	42.11	40.66	43.63	33.00-52.00	42.10	44.39	40.35
60 # Am.	43.97	38.21	39.91	34.00	35.60	40.49	40.02	40.32	27.60-52.00	40.14	41.46	37.70
55 gal. Wh.	.61	.46	.51	.56	.53	.52	.52	.56	.40-.74	.537	.56	.48
55 gal. Am.	.56	.44	.48	.54	.50	.49	.50	.49	.38-.65	.497	.51	.45
Case lots — Wholesale												
1/2 # 24's	21.15	18.73	15.20	17.65	15.87	21.68	15.60	21.00	15.00-24.00	18.78	18.66	–
1 # 24's	29.36	28.80	24.60	28.48	27.08	29.97	31.18	29.54	24.00-34.25	28.66	28.77	25.94
2 # 12's	26.39	26.30	23.67	25.53	25.36	27.45	27.50	27.98	21.00-29.61	26.00	27.40	26.40
12 oz. Bears 24's	27.01	26.28	27.26	24.22	24.93	25.53	28.40	26.20	21.60-34.25	25.94	26.29	–
5 # 6's	26.52	27.02	27.00	28.77	28.15	38.70	26.50	29.30	24.00-38.70	29.18	28.45	27.22
Retail Honey Prices												
1/2 #	1.17	1.15	.81	.95	.82	1.05	1.05	1.14	.75-1.35	1.03	1.16	1.06
12 oz. Plas.	1.57	1.50	1.35	1.38	1.28	1.31	1.62	1.47	1.13-1.79	1.44	1.47	1.37
1 #	1.65	1.76	1.55	1.66	1.45	1.66	1.99	1.70	1.25-2.25	1.65	1.70	1.66
2 #	2.95	2.90	2.46	3.02	2.71	2.77	3.15	2.95	2.29-3.50	2.86	2.95	2.82
3 #	4.30	4.05	4.19	3.99	3.99	3.95	4.49	4.12	3.75-4.72	4.09	4.05	3.92
4 #	5.43	5.12	4.88	5.01	4.63	4.66	5.05	4.95	4.47-5.75	5.00	5.08	4.93
5 #	7.12	6.38	5.90	6.45	5.64	6.34	6.15	6.76	4.59-8.75	6.41	6.50	5.97
1 # Cr.	2.21	1.94	1.89	1.80	1.45	2.22	1.79	2.10	1.39-2.95	1.95	1.97	1.70
1 # Cb.	2.95	2.40	2.23	3.25	2.49	2.50	2.95	2.87	1.99-4.00	2.75	2.66	2.52
Round Plas.	2.31	1.85	2.00	2.00	1.99	2.45	4.22	1.95	1.75-4.12	2.29	2.19	1.97
Wax (Light)	1.51	1.16	1.25	1.72	1.30	1.12	1.15	1.20	1.00-3.50	1.27	1.20	1.16
Wax (Dark)	1.20	1.03	1.20	1.08	1.05	.95	1.05	1.05	.95-1.25	1.09	1.04	1.06
Poll./Col.	31.60	20.67	20.00	31.67	30.00	31.00	27.33	27.00	20.00-35.00	28.00	27.97	26.88

MARKET SHARE

The drought of '91 is becoming a reality and producers are feeling the pinch in many areas. Production will definately be down this year. Prices, however, seem to be rising, at least to meet inflation. The world price, which importers will be paying, is still high, and maybe getting higher. Again, we suggest – save your "Home Grown" honey for the higher prices to come.

Region 1

Sales steady, which is good considering the warm weather, and prices steady to increasing a bit. Drought has had mixed results, causing some areas to produce well, others not at all or strong early and lost last due to being eaten. Rain needed throughout region to help (or create) fall flow.

Region 2

Sales predictably slow due to warm weather, but specialty honeys doing well, with prices generally steady but very high for what little sourwood and other special crops produced. Hot dry weather, generally, in north and west while south and east is the wet part. Both areas having average to less crops.

Region 3

Sales and prices steady for this time of year, but production a real mixed bag. Most areas measuring rain by the yard this year, making honey flows nonexistent. But the dry spots are doing well and will have excellent crops. They are, however, limited.

Region 4

Sales slow, mostly due to warm, warm weather, but prices holding well and expected to climb when crop is measured. Water, or lack of it is the word here. Early crops excellent, but then the faucet turned off. What hasn't been eaten may be needed for winter. Fall flow looks bleak.

Region 5

Sales reported strong across the region, and producers making lots of noise about big increases in price – or else. Weather playing havoc, too hot and dry or cold and wet. Crop looks to be average or a bit down – depending.

Region 6

Sales typical to a bit stronger for this time of year. Prices holding steady, generally. Africanized bee question still up front, affecting moving colonies to feed, out from pollination and the like. Programs in place are hard working, but its a big area. Colony conditions generally strong, but hot and dry areas need moisture for good fall crop.

Region 7

Prices and sales strong, and looking better due to good crop. Moisture, and lots of it the key word this year. Excellent crops predicted, with good fall flows expected, too. Should be a "average" crop, which is good, anymore.

Region 8

Prices increasing a bit, sales at least in northern areas strong, and looking better. Weather up north a bit of a problem, but late summer improving. Southern area a bit better this year than last, with citrus, cotton and other crops improving.

RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"Do honey bees know who their keepers are?"

Honey bees have brains and they use them. However, it is important to understand that their brains are small. Honey bees learn slowly and there are limits concerning what and how much they can learn.

So far as I can determine the first man to state firmly and without question that bees could learn was Dr. Joseph Reinhardt who worked for the U.S. Department of Agriculture and studied alfalfa pollination in the late 1940's. However, there were others around the world who were not satisfied to think that insects and other animals reacted only instinctively. There were several papers at about the same time that showed honey bees and other animals had remarkable abilities to do different tasks.

Reinhardt wrote that an "alfalfa flower is a trap. When a flower trips" (is visited by a bee and pollinated) "the space in the corolla is closed, and if the space is occupied by a bee's proboscis the bee is caught and must free herself."

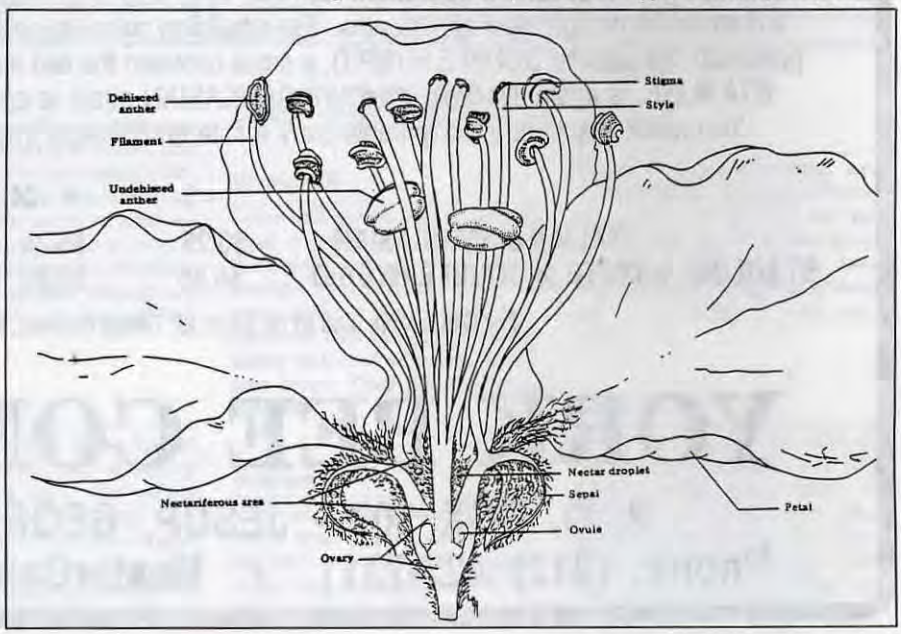
This physical action by the flower, whose sexual parts are held under pressure in the flower's keel, is called "tripping" It has been described as an "explosive action" Reinhardt writes about bees that were caught in this manner as follows, "She may free herself with a single jerk, or, in rare cases, 45 seconds of struggle may be required." Occasionally a bee is found dead after being caught by a flower's tripping mechanism from which she was unable to escape. Reinhardt observed bees learned that if they inserted their proboscis at one side of the flower they could collect nectar and avoid the explosive mechanism. He found some bees learned more rapidly than others.

In the late 1940's, Professor Karl von Frisch published data to show that honey bees could recognize several colors clearly. He first trained bees to feed from a dish of sugar syrup resting on a piece of blue paper. After the bees had made several collecting trips, he removed the dish but placed a new piece of blue paper, surrounded by other pieces of paper of different colors and/or papers of varying shades of gray. The trained bees would land on the blue paper first. However, bees confuse "yellow with orange and green, or blue with violet", indicating their color sense is not so sensitive as that of humans.

In a bee yard, one can confuse bees by exchanging the positions of colonies with supers of different colors. When colonies are moved only three to five feet returning field bees fly first to the old location. Likewise, bees use trees and shrubs as orientation markers both at a feeding station and in finding their home. Moving these only a few feet will cause the bees to fly to a different location – but they soon reorient.

Dr. Will Robinson sought to determine if one of the reasons for low yields in "red delicious" apples could be poor pollination. In apples, the five female flower parts grow from the center of the flower and connect to the ovary that produces the fruit. The female parts are surrounded at their base by the nectary, the gland that produces the nectar that bees collect and make into honey. Around the outside of the nectary are 20 male flower parts, called stamens.

Longitudinal section of 'Delicious' apple blossom, x6. (USDA)



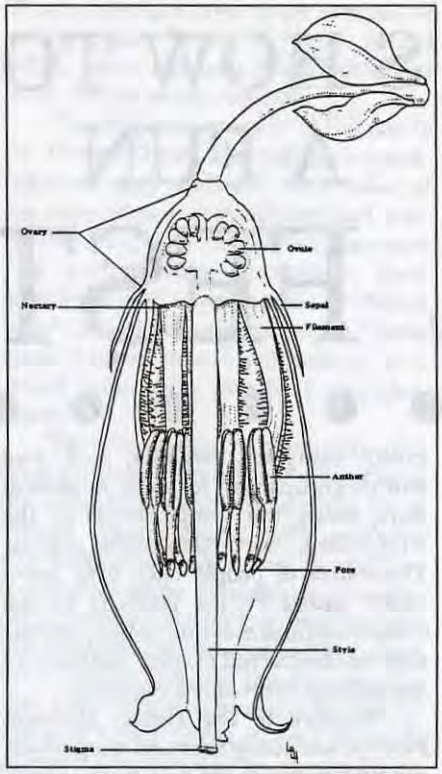
At the top of each stamen is an anther that contains the pollen. In most apple varieties the stamens are packed closely together. For a bee to collect nectar she must insert her proboscis between the male and female flower parts and into the nectar. In this way she contaminates her hairy head with pollen from the anthers that is then accidently transferred to the stigma which is atop of the female flower parts.

Robinson observed that in the red delicious variety the male flower parts were far apart. A nectar-collecting bee can stand on a red delicious apple petal and insert her proboscis directly into the nectar without coming in contact with the flower's sexual parts. Such bees do not pollinate.

I mention this because this past spring I made observations on blueberry pollination in Florida. Only recently, has growing blueberries become popular and profitable in Florida, which produces the first domestic blueberries on the U.S. market. However, production is not as great as desired and it is possible poor pollination may be a factor.

Carpenter bees (genus *Xylocopa*) and one species of bumble bee are reported to chew holes at the base of the bell-shaped blueberry flowers, close to the nectary, so as to reach the nectar easily. Honey bees soon learn to use these holes, which serve as a shortcut for nectar collection. I visited one Florida blueberry field where almost every flower had a hole cut in its base. All of the honey bees I observed were using these holes to collect nectar, an example of a learned behavior. In some areas in Florida carpenter bees are so abundant there is insufficient blueberry pollination.

The above are only a few examples of learning by honey bees. I am often asked if bees recognize their owner, or at least the person who manipulates their nest. There are certainly no data to indicate this occurs. A bee's ability to learn is apparently limited to the activities that are important in their lives, especially foraging and the location of their home.



Cross Section of a blueberry flower. (USDA)

All of the above examples can be demonstrated in the classroom or laboratory and without owning a colony of bees. In my class in introductory beekeeping I give students alfalfa flowers and a toothpick and ask them to pretend they are a honey bee probing for nectar. The students are surprised when they see a flower explode and pollen fly into the air in front of their eyes. I give them the yellow birdsfoot trefoil flowers at the same time. It has a physical structure much like that of an alfalfa flower but there is no explosive mechanism. In the case of birdsfoot trefoil, a toothpick pressed onto the keel, which contains the sexual parts, causes the slow release of pollen that drips from the keel's tip.

In addition to the references below, D. R. Griffin's *Animal Thinking* (Harvard University Press, Cambridge. 1984) discusses thinking and learning on the part of other animals in detail.

When honey bees learn quicker and easier methods of collecting nectar and avoid the sexual parts of a flower they are obviously not good pollinators. What has been done in the cases cited above is to use more colonies per acre. This increases the number of naive bees that will need to visit many flowers before they, too, learn to avoid the flower's sexual parts. This might be called pollination by brute force but it works. Of course, if a colony is short of pollen, some of the bees will collect pollen of necessity and be good pollinators. We have seen this last work in the case of alfalfa and delicious apples but blueberries produce little pollen that honey bees can collect and the pollination of blueberries where there are carpenter bees in numbers poses a greater problem. □

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HERE'S HOW TO HAVE A FUN FALL FESTIVAL

Fall means aster and goldenrod bloom, bright colorful leaves, and September as Honey Month. In Carroll County, Maryland, it also means it's time for the Honey Harvest Festival.

The Carroll County beekeepers held their festival, the fourth annual, on September 16, 1990, at Hashawha Environmental Center. Hashawha is an Indian name meaning "old fields" This county funded facility is in the beautiful rolling hills of the Piedmont section of central Maryland close to the Pennsylvania border. It is a center for environmental education, conservation, and nature activities.

The Honey Harvest Festival attracted over 1000 visitors last year. Hashawha also holds an arts and crafts holiday festival and a maple sugar festival in early spring. These popular events bring in the general public, but the center concentrates primarily on group camping. Schools, 4-H, and church groups visit for a day or several days, using the campgrounds or the winterized, dormitory-style cabins. Thousands of people each year learn about nature on the trails or in the classrooms and meeting rooms. Groups such as the Carroll County Beekeepers Association meet there regularly.

Visitors to the Honey Harvest Festival see honey bees and learn about honey, bee products, and beekeeping. Exhibits include an actual apiary, a mock apiary, an open-hive demonstration, a bee beard, honey extracting and tasting, and more.

The tractor-pulled hayride carries visitors over the rolling countryside and stops at several locations to teach about bees. A full-time apiary currently containing three colonies is one stop on the route. Naturalist Loren Lustig uses the apiary for demonstrations throughout the year. Local beekeepers maintain the colonies, and the honey they provide is used by the kitchen at Hashawha. On this day, Garey Wilmsen opens the hives and shows visitors how an apiary works.

Another hayride stop is a log cabin housing "mountain man" Kirk Dreier. A naturalist working at the Oregon Ridge Nature Center, Kirk, wearing his best buckskins, shows youngsters how to follow a bee line to a colony in a tree.

As the tractor chugs up the hill, the hayriders pass a cluster of exhibits near the main building. Two screen tents are set up with bees inside and lots of people outside. In one, Ed Armacost gives an open-hive demonstration using one of the colonies moved up the hill from the apiary for the occasion. In the other, John Romanik puts on a bee beard. In the adjacent pavilion, Albin Drzewianowski hand-dips beeswax candles, and Shirley Painter sells honey bee T-shirts. Nearby, Bill Van Aller and his "mock apiary" (hives, but no bees) show visitors how a hive is constructed and what the parts are used for.

Near the front door, Valerie Gauss and Kim Shinozaki are doing a brisk business in honey and wax featuring extracted, comb, and chunk honey from several floral sources and a variety of beeswax chunks, candles, and ornaments. The association purchases the honey on consignment from members and keeps 40% of the selling price.

Candle dipper Albin Drzewianowski (Photo by McDaniel)

As the kids get off the wagon and start picking bits of straw from their clothes, they spot "Buzzy Bear" and make a beeline for him. The costume gives Jim Gronaw, a Hashawha staffer, a chance to have fun with the children, who find the oversized teddy bear irresistible. They can't help hugging him and pulling his tail. The National Honey Board really hit the bullseye with this promotion for honey, and we appreciate their lending the outfit to us.

A new addition to this year's festival, the honey ice cream booth, is a big hit. Some of the ice cream is made on the spot in hand-cranked freezers, with each youngster having his turn at the crank, and some is made up ahead and frozen hard enough for dipping for cones. Angie McDaniel, Wilbur Wright, and Don Jacobs can't dip it fast enough. Five gallons is nowhere near enough to satisfy the demand.

Inside the main building, Melinda and John Byrd extract honey for crowds of onlookers, who get to sample fresh cappings on the spot. John Wolbert mans the observation beehive, and Wayne Straight gives taste samples of over a dozen flavors of honey. In another room, children are entertained with movies about insects.

The featured speaker of the day is Dr. Dewey Caron, who regales a standing-room-only audience with tales of his experiences with Africanized bees in Panama. The fascinated listeners find authoritative answers to their questions and concerns about "killer bees". Later in the afternoon, Dr. Caron speaks again about pollination to a crowd reduced in size by a thunderstorm.

To help insure a good turn-out, Hashawha mails out fliers advertising the event to an extensive mailing list of related organizations, raffle entrants and registered beekeepers, in addition to sending press releases to newspapers. Those who enter the drawing for a free beehive are approached to take a short course and join the bee association. Free doorprize coupons for hourly prizes of honey, given to each festival-goer at the entrance by teenagers Jerry, Jeffrey, and Katie Wright, provide an accurate count of visitors. With this effort, attendance has grown consistently each year. The four-hour festival (1-5 Sunday) is vulnerable to bad weather, but this year was successful despite rain starting about 3:30 p.m.

Such a festival has many benefits for a local bee association. A lot of volunteers are needed (seventeen at this event), so it involves the membership in a concerted, joint effort. The beekeepers plan, organize, and then run the festival. It helps make the association and beekeepers known in their local community by their advertising and newspaper articles before and after the event, and it helps bring in money for the association's treasury.

Make your neighbors think of fall and honey as going together by organizing a similar Honey Festival in your area. □

Fall Festival was written by Steve McDaniel, member of the Carroll County Beekeepers, and Dr. Dewey Caron.

Ed Armacost (inside cage) safely demonstrates bee biology and care to the harvest festival participants (safely outside the cage). (Photo by McDaniel)

Buzzy Bear (Jim Gronaw of Hashawha) and some young admirers. (Photo by McDaniel)

F·A·I·R T·I·M·E

PAMELA MOORE

Fairs aren't always fair when it comes to beekeeping.

An obvious problem is the bees themselves. Some die due to heat, wedged between two layers of plexiglass in the obligatory observation hive. Some die because the display area wasn't heated, and the overnight temperature fell, with no one able to cover the display. One beekeeper recalls that before plexiglass was used a youngster actually used a rock to break the glass enclosure – and the Pandemonium that resulted will be long remembered.

Then there's the problem spectators can pose at a fair. Most folks wandering by a bee display are pretty nice, and are often interested in the bees. Some associations even sell a substantial amount of honey and related products while setup at the fair, so they make money *and* educate people at the same time. But there's always a certain amount of pilfering that goes on with all displays at a fair. So by placing individual pieces of honey candy out for samples they may discourage a fair goer from lifting a whole bag, and it might even encourage him to buy a bag or two.

Most Bee Associations have devised ways of dealing with what happens once they are set up at the fair through years of trial and error. But the one area that still seems to confound both the beekeeper and the Fair Board is communication (or the lack of) between the two.

It makes sense for them to have a good working relationship. After all, beekeeping is an agricultural pursuit, and the fair is an agricultural event. If the Fair Board can manage to house a prize bull – surely a bee display should be an easy task. But one instance serves as an example.

Two beekeepers sit outside their barn waiting for someone to unlock the door. After a fair board director is waved down and a key is brought, the beekeepers went in and prepared the display for the day. A fair-goer arrives and asks how soon the honey judging will take place. The beekeepers, who don't get that many inquiries about their honey judging and were happy to see someone, had to tell the person that judging was the day before – the fairbook had listed the show time incorrectly.

A quick investigation showed the Fairboard had scheduled the judging of farm produce – all of it, for one time, but then listed honey judging at another time. It was a simple mixup, as even the U.S. Department of Agriculture has trouble defining bees and honey. The beekeepers could live with it, at least those who had their honey in place. Some of them missed the judging and the opportunity to win a ribbon. But the association lost an opportunity for someone to see honey judging and lost a chance to educate one more person about bees.

When asked about scheduling and printing fair books, most Fair Secretaries indicate they have little input from beekeepers.

"It's been the same for so many years," said one secretary, "that we just take it for granted the beekeepers will be there and they have everything under control. We have never had a beekeeper on the fair board, nor has one even been on that committee."

At least this fair secretary was aware of the beekeepers. She happened to be a fan of bees and honey and takes an interest in their activities. One fair secretary indicated he didn't know if there would be a honey display at his county fair. After checking around the office and asking other board members, he decided that yes, there probably would be a display, because there had always been one, but had no idea which barn it would be in.

But it's not all bad news at the fair – beekeepers in locations other than this have only positive relations with their Fairboard. "We used to be in a pretty run down barn, no ventilation, no heat. But look at us now," said one beekeeper as he swept his arm around to include the entire building. It was a beautifully landscaped barn, with concrete floors and walls that accepted the shelving needed to display honey.

"The bees are more comfortable too," he added because of the circulating fans and the ability to close the barn down tight on cold nights.

This positive reaction came from an association ac-

A well tended booth will draw interested people. Lots to look at really helps.

tively involved with their Fairboard. Although no one from the association, which included two counties, sat on the Board, members did attend Fairboard meetings.

"We have to know what's going on. We know we're not as important as the dairy people, but still we are important. What would agriculture be without us? We just let them know we're interested and we want to do whatever we can to make the Fair a better experience for everyone," he said.

This beekeeper was most interested in setting up a display to catch the eye of passers-by. He also mentioned *the* common problem in beekeeping – getting and keeping younger folks interested in the activity.

"This is our one chance to start an interest in beekeeping, and we have to take advantage of it. If the Fair Board can give us a good location, it's up to us

Continued on Next Page

S·U·G·G·E·S·T·I·O·N·S

Before the fair, be sure to make a visual inspection of the area you are allotted. Measure the booth space, don't just guess the square footage. A four foot display will not squeeze into a three foot space, and it will make your neighbor in the next booth upset if you spill over.

Look at the building itself. Does it have air conditioning? Fans? Windows? If summer heat is a problem is there somewhere you can position a fan to keep your area cooler? Does the building have heat? This is especially important for fairs held in late summer and fall when the temperature may unexpectedly dip and cause damage to live bees in a display. If no heat is provided, what can you do to keep your area comfortable? Will you have to provide a protective cover for the bee display at night? Can you bring in a space heater for the volunteers in the booth?

Check the booth for electrical outlets. Ask the department chairman if you may use electricity for all the appliances you may need (fan, heater, rotating display, etc.)

Look at the floor – is it even, is it cracked – making you look lopsided? Plan on having some material available to align tables or displays. If it is a dirt floor, can you bring in an old carpet to make it more comfortable and more appealing to the public?

Check to see what shelving is available. If there is some already in the booth, test its strength. A case of broken honey jars isn't going to make the fair board any happier than it makes you when it comes time to clean it up. If you need additional shelving, measure again, and make a note to bring in something that will hold the items you need.

Ask if front tables are provided. If not, measure both width and length so you bring in the proper size. (It's a good idea to make sure all tables are the same height, because it never fails that a smooth bottomed item ends up on the crack between two tables.)

Check with your chairman to see if skirting is available. If the fair board doesn't provide this – plan on making your own. This doesn't have to be fancy fabric – it can be well placed rolls of paper. Make sure it reaches from the top of the table to the floor. This dresses up a booth and gives it a more professional appearance. It also looks better than a lot of legs under the table.

If your association has planned staffing shifts appropriately (and a schedule should be made ahead of time with backups for volunteers who will show in an emergency) *sitting* won't be a priority. But everybody gets tired and needs a little rest while working at the fair. Have at least two chairs in the booth, but make sure your volunteers realize that the reason they are there is to greet the public, not rest. This is the chance your association needs to get the word out to people who would otherwise never even think about bees and honey. Fair time is public relations time.

The person coordinating the booth should have volunteer shifts published for the entire group. In addition to having enough people in the booth – there has to be enough merchandise available. For many associations, the fair can be a money maker, but if no one has scheduled deliveries of honey, it can turn into a frantic race to find the product before the customer leaves.

Post proper procedures for opening and closing the booth and how to handle money. By simply listing these on a sheet and posting it in the booth, each shift won't be wondering if they did the right thing.

If your booth is selling products be sure each shift of volunteers starts with enough change. The middle of a sale is not the time be rummaging through pockets to make the right change. An adding machine with a tape provides reliable change and also a receipt for the customer (again check your electric outlets at the booth – will you need an extension cord for this one?)

Remember the comfort of your volunteers. Remind them to wear comfortable clothing and shoes. Keeping a thermos of lemonade or coffee will make those sprints to a concession stand unnecessary. Snacks are sometimes nice to have at hand, but the public doesn't enjoy asking questions of people who have their mouths full.

Team an experienced fair volunteer with a nonexperienced volunteer if possible, because it creates a smoother running booth.

Ask your fairboard if it charges for agricultural associations to display at the fair. Some fairs charge the going rate for merchants, others a reduced rate, and some don't charge anything for groups such as yours. Know this up front – it will affect your profits, and should affect your pricing of honey.

Find out from your department chairman where to put your car for loading and unloading the display and for replenishing your merchandise. Fairboards try to keep vehicles out of the fairgrounds, except for set-up day. You should be able to park near your barn for set up. If you can't drive a vehicle into the fairgrounds to bring in more honey or heavier supplies as you need them, ask if a golf cart could be made available for the times merchandise is just too heavy to carry.

Most seasoned beekeepers who have staffed beekeeping booths over the years report a satisfying experience – one they truly enjoyed. With a little planning and lots of communication, it can be a positive and profitable experience for your association also. □

FAIR ... Cont. From Page 479

to have the best display in the barn," he said.

And what a display it was – color nearly assaulted the eye and no one could walk by without looking at something in the booth. Large photographs of bees on flowers were on the back wall, with assorted plush bees hanging from hooks. The honey and honey candy were attractively packaged on the table in front of the volunteers, along with pamphlets on beekeeping. And the booth staffers were smiling at the crowds – inviting them to stop by and ask questions. It sounds idyllic, but it didn't get that way by accident. This association worked with their Fair Board.

It is important for anyone displaying at a fair to realize what kind of job the Fair Board and Fair Secretary has, especially during the event. According to one secretary, "There's a crisis every ten seconds or so – the electricity goes off in a frenchfry booth; a steer wanders out of his stall and causes a panic; I get a report that the grand champion rooster just died of heat exhaustion and we have animal rights people on the grounds; paramedics are transporting a cardiac case out of the fairgrounds through heavy traffic; and that's just the regular stuff – there's always the big name entertainment to keep happy when they arrive at the fair grounds. It's not just agriculture anymore. I don't want to hear about problems when they happen, I want to be able to prevent as many as possible to make the fair a success both for the fair goer and financially for the agricultural society."

Fair Time is P.R. Time

This interesting tale comes from a fair secretary who has been praised at her state's fair conventions year after year for her efficiency.

But most beekeepers don't want to know much about how the fair works – they just want it to go well. So a little understanding of structure may help in figuring out who can do what for your Bee Association.

A typical fair is sponsored and run by the county's Agricultural Society, although some fairs may come under the direct supervision of County Commissioners or Supervisors. A fairboard is elected each year with many of the same people serving year after year. For our model fairboard there are 25 directors representing various townships or cities in the county, and a couple of directors-at-large. These directors elect a President, Vice President, Secretary and Treasurer. Although the President holds ultimate responsibility, usually the Fair Secretary holds the most power and authority. The Secretary is the boss, because he or she must make decisions for the board.

From these 25 or so directors, as many as fifty committees are formed which deal with everything from security and camping arrangements to housing rabbits comfortably. Each director heads a committee and serves on a number of other committees. Volunteers are also recruited to serve on these committees, usually because of their expertise in the area. Each committee has a chairman and co-chairman.

Honey bees generally fall under the heading of Farm Products, Farm Produce, or Agricultural Associations. But if it's the latter, you can be sure your booth is the only one with live critters in it.

Fair Boards meet about once a month, and more often as fair time grows closer. Directors and officers are selected in the fall and activity increases in the spring. A good time to get involved is early on, right after all the committees have been assigned – or earlier if you choose to serve on a committee.

The people the fair board see in October will be the ones they remember when a problem arises during set up time during the fair. It's unwise to plan on immediate action to a problem during fair week if someone from your association has not shown up at an earlier date to make themselves known.

Fair Secretaries like to work closely with bee associations in their county. *Communication* was the key word, used over and over again. What beekeepers take for granted is that the general public doesn't know about your needs. A little time before the fair will make the event a success, both personally and professionally. □

SEPTEMBER STORY

10 STEPS TO WIND DOWN WELL

DR. DEWEY CARON

Taking proper care of your colonies now will help you realize your goal to have strong, productive bees next season. For some, fall means surplus honey production but for most of us fall is a time to prepare for proper overwintering to insure a healthy start next season.

Honey Production

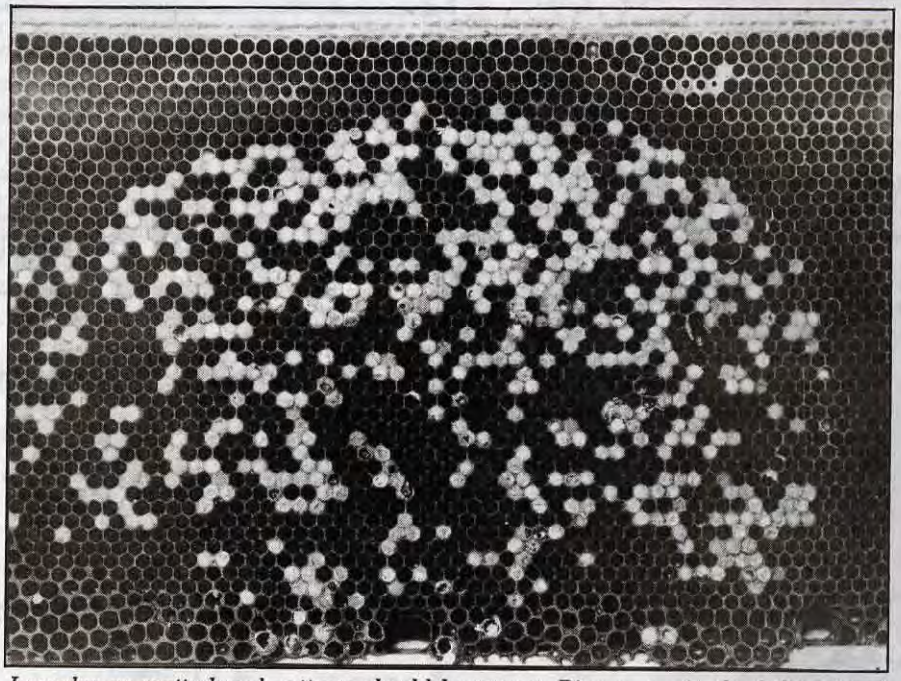
Most beekeepers rely on fall nectar sources to provide honey stores for overwintering colonies. However, in some areas goldenrod is a surplus nectar source.You can extract the honey during September until the bloom succumbs to the freezing nighttime temperatures. Then you can feed sugar syrup to replace the honey removed. Some of the crop must be left for the bees to overwinter.

Goldenrod honey is not often considered one of the best tasting varieties of honey. It is heavy and strongly flavored. It also crystallizes rapidly. As an over wintering food, goldenrod (usually mixed with asters that bloom at about the same time) is not regarded as ideal for bees during long confinement. Other fall sources for bees include *Bidens* species (Spanish needle), fireweed and certain cultivated crops like cotton and lima bean.

Fall Inspection

Once you have harvested the surplus honey you are ready to start fall management. Obviously, the later you wait to harvest the surplus, the less time you have available to get colonies in proper overwintering condition. In most areas, September is a good month to begin fall management and in many areas you can continue working and preparing bees for winter in October into November.

If you do nothing more in the fall, plan on opening each colony and conducting a standard fall inspection. During this 5 10 min/colony inspection look for the amount and position of honey stores, brood pattern, healthy brood and adult bees, and the condition of your beeswax combs and hive equipment.



Irregular or spotty brood patterns should be suspect. Disease, or simply shifting brood patterns may be afoot. Check again in a week.

Most colonies adequately prepare themselves for winter. You are only looking to correct problems. In seasons with a

A thorough fall inspection is needed to check every attribute – disease, food, the queen ...

poor nectar yield or when the fall bloom is not adequate, you may need to feed colonies sugar syrup to supplement their stores. For colonies with a low population (perhaps a swarm you captured or a divide you made earlier in the year) or for those that have too much brood (colonies started from packages probably), you may need to manage more extensively.

During your inspection, move frames with a lot of drone comb, or are otherwise in poor shape to the outside of the hive body. Remember the brood pattern should be a sphere. You don't want to disrupt this sphere if you do the inspection late in the season. In colonies too large, you can force a more compact brood pattern by using a queen excluder to confine the queen to the lower hive body. Capped brood can be placed above the excluder. Only perform extensive manipulations on colonies early in the fall – the longer you wait the fewer options you have for management.

More Food

It is relatively easy, and beneficiall, to feed bees a heavy sugar syrup to assist in the colony's winter preparations. There are many ways to feed sugar and many pieces of equipment to make it easier.

Generally, feeding syrup at the top of the brood chamber results in the bees storing more of the syrup. You can buy expensive feeders but ordinary jars or cans with removable lids work adequately. The key to getting the bees to store the syrup is to mix a heavy syrup (two parts sugar : one part water by volume) and to put it where the bees can readily take it.

You can't really feed bees too much syrup. As long as they take it, they will put it to good use. Some beekeepers feel sugar water honey is better for overwintering than honey from sources such as goldenrod or aster. An advantage of bees storing sugar water honey is that they put it in areas where brood has hatched as the brood area contracts. Thus it goes into the best position to serve as a winter food source.

You can feed sugar in other forms and use feeders of different designs. You can also feed honey if you know it is from foulbrood disease free colonies.

If you have partial combs of honey and some crystallized in the combs, slash at the cappings and put the box on the bottom of the brood box or on the top, over the inner cover with the oval opening open. Bees will clean up the "mess" and move the honey to arrange for the winter where it is needed. Remove the emptied combs before winter. Some colonies have more honey than they need for winter so you can remove frames or boxes from colonies that are strong to supplement those that are light in stores.

You should strongly consider mixing fumagillin (Fumidil-B®), the drug that reduces Nosema disease, into your sugar syrup. We know that 50% of bee colonies have injurious levels of Nosema disease, a protozoa that lives in the cells of the gut of the adult bee. The drug reduces the pathogen population below injury levels. If you have never had experience with Nosema, I recommend you do an experiment with your bees this fall. Divide the number of colonies in two equal portions. Feed one half a syrup with Fumidil-B® and the other half just the sugar syrup. See if one group performs better overwinter and if they are in better shape next spring with less evidence of dysentery. If you have a Nosema infestation, you will notice a difference.

Remember, you can make a difference with relatively little effort in the amount of food stores the bees have available for winter. The key is to estimate how much each colony has during a fall inspection and feeding honey or sugar syrup to those that need more stores early enough so they can organize their brood sphere. To supplement light colonies, no one system it best – use one that is convenient for your situation and budget.

The Brood

Depending on when you do your fall inspection, you may observe a very

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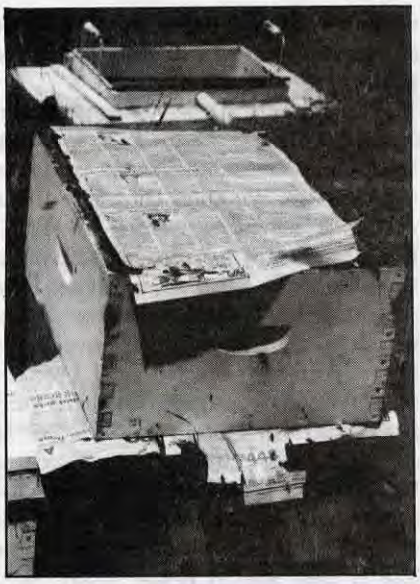
Feeder pails work well for syrup, are inexpensive and don't break in the back of the truck.



Uniting weak colonies to stronger ones is a healthy idea. An old and wise axiom is "Take your losses in the fall, and make them back in the spring."

SEPTEMBER ... Cont. From Page 483

abnormal brood pattern during fall months. As the bees reduce their brood sphere, the colony may have a spotty brood pattern with many open cells. If uncertain about the pattern, mark the colony and look a week or two later to see if it is more regular. If you feed a heavy sugar syrup between inspections you will observe bees filling in the empty cells with ripening honey and only capped brood still to emerge will seem irregular. There should be reduced drone brood.

You can help insure good overwintering, and less problems with swarming next spring, by requeening your colonies in the summer. Requeening is possible in early fall but don't wait too late since the introduced queen needs to establish her brood area. Young queens make management a lot easier but requeening takes money and time. Still, too few beekeepers requeen regularly.

If you have a poor queen, or too small a bee population, you can avoid a possible winter loss by combining colonies. Kill any queens that do not meet your standards and go with the best queens – don't leave this task to the bees as you can do earlier in the season since you won't have time later for further adjustments.

To combine colonies, reduce each to one box of brood comb. Put a sheet of newspaper between the two colonies you combine. Allow the bees to chew the newspaper away as they mix the two units. Kill the queen that you don't want. The earlier you combine the better because the bees have to reorganize into a single brood sphere and fill in the cells of emerged brood with honey stores. Feed a heavy sugar syrup to the unit. You may need to leave another box of honey for a combined unit to insure they have enough food reserves for the winter.

The end result you hope to achieve is a compact brood sphere in the lowest brood box – or between the two brood boxes with solid honey stores above and to the outside of this sphere. You can help force this pattern if you start early enough.

The Cluster

Whatever the season, honey bees maintain a pattern in their parallel honey combs. The brood nest is roughly spherical in shape. As temperatures drop and less nectar/pollen becomes available, the spherical shape of the brood area becomes more evident. With decreasing temperatures, the brood area contracts and becomes more limited. As the temperature in a beehive drops to 57°F, bees start to cluster over the brood area. With a further drop of the internal temperature, the cluster becomes better defined. With both a spherical brood area and clustering behavior, the bees are able to maintain a central hive temperature in the 90° range whatever the outside temperature.

A bee cluster has a structure to it. There is an insulating shell, varying from one to three inches thick, of tightly adhering bees. Within the cluster, the bees readily move about taking care of brood, their queen and performing routine comb maintenance. Bee movement generates the heat that keeps the bees warm. Since bees use winter stores most efficiently at 45°F, the amount of honey stores they consume to maintain a winter cluster is not extensive.

There is a practical limit to which bees can contract their cluster. A portion of the cluster needs to be in contact with honey stores since this is the fuel to run the muscles that generate the heat energy. Smaller clusters are more vulnerable to running out of available

Entrance reducers help protect against mice, drafts and other problems.

Tracheal mites should be treated with menthol before cool weather sets in.

honey stores than larger clusters. Winters with widely fluctuating temperatures are often more stressful on bees because they are more active, and consume more honey. However, they are also less efficient in heat production when this occurs.

Healthy Bees

The fall inspection should include a thorough brood examination. Colonies with American foulbrood (AFB) may not survive the winter. The resulting population, if the colony survives, will be weakened and remaining honey stores can be robbed by bees from other colonies, spreading AFB and eventually killing all colonies in the apiary.

The stress diseases of chalkbrood, European Foulbrood (EFB) and sacbrood will more likely be evident in the early spring than in your fall inspection. There is no antibodic treatment for these diseases – good healthy colonies headed by young productive queens is the best preventive for these.

Nosema, the protozoan disease of adult bees, will spread and prosper in overwintered bees. You can (and should) feed Fumidil-B® to counter this disease.

Bee mites are a recent factor to consider in making fall manipulations. The tracheal mite is now widespread in the U.S. If you or your neighbors have it or you suspect it is present, you need to fumigate colonies with menthol crystals or pellets. This miticide works best with a continuous fumigation action and if you wait too late into the fall, when nighttime temperatures get low, the material is less effective. You should plan to treat early – *as soon as surplus honey is off the colonies.*

Varroa mite is less widespread but still present in many colonies. If you have a *Varroa* infestation, you need to treat colonies with the Apistan® miticide strips for good overwintering. Again, do this once surplus honey is removed and as early in the fall as possible for best results.

Autumn Pests

A common fall pest is the mouse or their cousins voles, deer mice and the like. Reduce the colony entrance early before field mice establish their winter nest. Many beekeepers wait too late to put mouse guards on their colonies. Mice like to live along the margin of a field which is frequently the same location beekeepers select as their apiary site. You will winter better if you keep mice out of the colony.

Finally, don't neglect to protect any comb you place in storage from wax moth. The adult moths lay eggs on the comb even before you remove it from the hive. Put honey-filled combs in a freezer to protect the product. Fumigate extracted combs and all other comb you place in storage with PDB insecticide, commonly called 'para', which is available from all beekeeping supply companies. It is easy and safe to use, and will keep your combs free of damage.

To Winter Well

Honey bee colonies in the North have a longer winter period to survive and thus they need more winter honey reserves than colonies in the south. Whereas colonies in he Gulf coast states survive with 30 or fewer pounds of available honey reserves (and can be fed easier during the non-productive months), colonies in more northerly areas need up to 90 lbs of honey reserves. Not only must the reserves be adequate, they must also be organized by the colony in a position to be utilized over the period of clustering behavior. Thus the major activity for fall management is to insure adequate food stores for overwintering.

There are other factors in addition to insuring overwintering success in fall management. We want colonies not only to survive but also to have populations of adequate size ready to utilize spring nectar and pollen sources. Thus additional fall management activities include –

- Insuring young productive queens
- Checking to be sure colonies are free of diseases and protected from pests
- Overwintering colonies of proper size for normal cluster behavior
- Providing proper protection from winter weather

Protection

At one time beekeepers in more northerly climates always wrapped colonies for winter. Some still do. Studies have demonstrated, however, that tar paper wraps, burying colonies, moving bees into protected shelters, using heat tape or a light bulb over a

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It's too late to worry when winter's here. Follow these 10 steps for a secure and healthy spring.

colony are not always necessary. Bees not protected usually survive as well as protected colonies. Thus most beekeepers forgo the time and expense of extra protection for their overwintered hives. This is less true where winters are extreme, however.

You should always do a few simple things, however, to help your colonies overwinter. Move colonies to more moderate overwinter locations within your area if you don't move your colonies to the Southern U.S. Areas out of direct wind and with a windbreak on the sunny lee side of the wind are best. Avoid pockets of low stagnant air. If the apiary lacks a natural wind break, make a temporary one to help avoid the drying effects of the wind.

In each hive see that there is upward ventilation. Some bees propolize heavily, and you will need to remove the covers and scrape the bee glue so warm moisture laden air can vent from the top of each colony. Alternatives are to place a shim, carpet tack or stick in one of the corners of the top. You don't want gusts of wind to circulate through the hive. A tiny vent is all you need. Reducing the colony entrance also helps keep drafts down (but reduced entrances are more important as a mouse entrance guard).

Some areas are better winter sites than others. If you consistently lose colonies that are prepared for winter look for alternate sites. One factor that helps bees is a reliable early source of pollen. Sometimes a short move may give better wintering results.

Finally

A thorough fall colony inspection and attention to a few details will help insure successful overwintering. Inspect each colony to be sure it has a compact brood sphere with adequate honey stores above, and sufficient quantity for your area. The brood should be healthy and ideally the colony will have a young vigorous queen. Poor quality combs should be moved to the outside of the brood sphere and honey storage area.

Each colony can profit by being fed Fumidil-B® in a heavy sugar syrup for Nosema control and colonies fumigated with menthol for tracheal mites. If varroa mites are present you will also need to treat. Mice and larger mammals should not be pestering the colonies – an entrance reducer can insure that these mammals don't become a problem.

Colonies low on stores should be fed a sugar syrup. Feeding right over the brood area is best. Remember, bees must have time to organize their winter stores to best advantage. Provide ventilation of warm air to the outside through the top of the colony. As a beekeeper, you are trying to catch and correct problems. Good luck this coming winter. □

A BETTER WAY
WEIGHING HIVES

JAMES BRIMHALL

Although monitoring the weights of beehives remains as important as ever, no technical breakthrough has appeared which allows an inexpensive and readily available solution. Old upright scales are rare these days and the newer, spring-indicator devices are expensive, subject to weather deterioration and can serve only one hive at a time. Responding to the need of an alternate approach, I developed a procedure that involved tilting a hive using a fisherman's scale tied to a hive tool. This technique was described in the November 1977 issue of *Gleanings in Bee Culture* and I have continued to use it over the years. The procedure consists of recording the force needed first on the front, and the rear, to tilt the hive. The actual weight of the hive is then read from a graph as explained in that article. A disadvantage is that certain calculations must be done to produce the graph in the first place, and not all of us care to understand the mathematical process to that level of detail.

That procedure has now been simplified to the point that a chart is *no longer* needed. Hive weight measurements are accurate to ± 5% for any number of hive stories. The weight is obtained by adding the **force** needed to tilt the hive from the front **F**, to the **force** needed to tilt the hive from the rear **R**, and then *multiplying* that sum by a constant **C** which depends on the type of hive support being used. The weight result is simply:

$$W = C \times (F+R)$$

where **W** is the weight of the hive, **C** is the Constant, **F** is the force needed on the front, and **R** is the force needed on the rear. Constants **C** for some common setups are provided below and constants for other configurations can be furnished upon request.

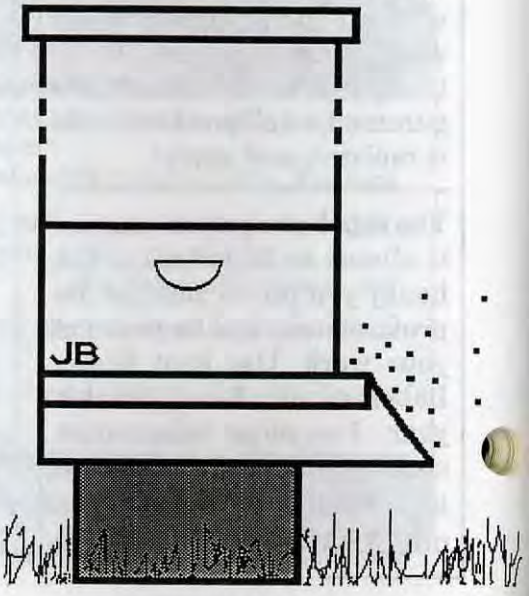
In all cases, the procedure is to slip the hooked end of a hive tool under first the front of the hive as shown, and then under the rear while in each case measuring the force on a spring scale needed to just barely tilt the hive. I use a nylon cord to connect the hive tool to a 50 lb. spring scale, and made a wooden handle for easy lifting. Spring scales with larger weight ratings are readily available.

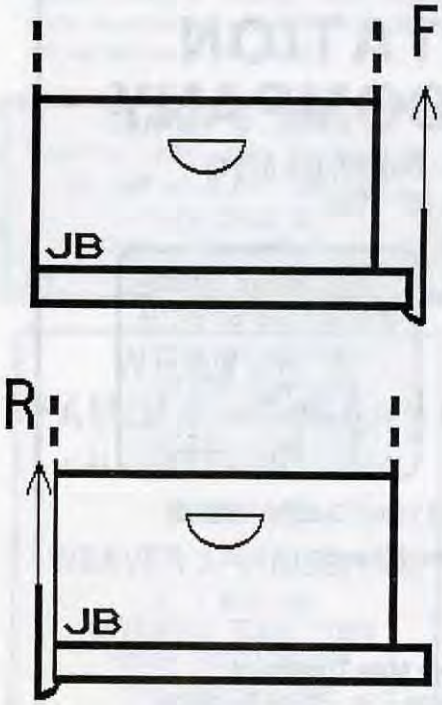
Constants **C** are provided for three common situations. A standard 20 in. long hive is assumed, but the procedure works for any width hive and for any number of stories.

1) A.I. Root-type *hive stand* with the hive centered on standard 8" x 16" concrete blocks.

C = 1.3

With a hive on a hive stand which sits on blocks, C = 1.3

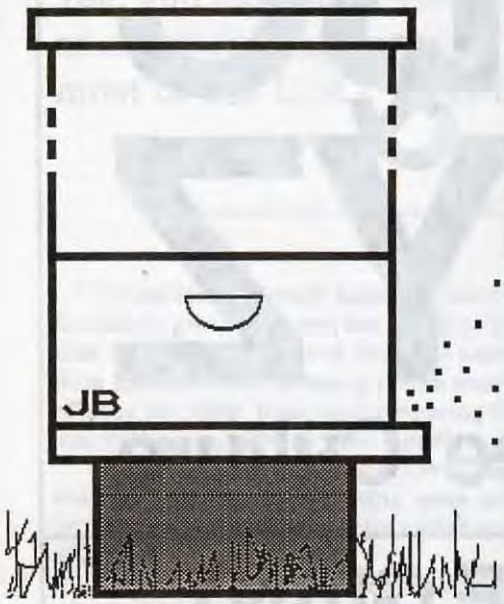




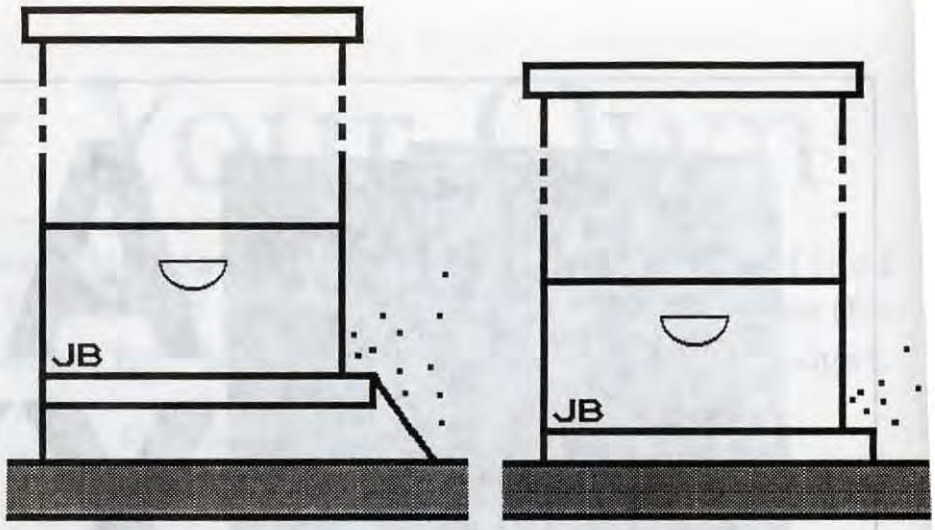
First, lift the front of the hive with your hive tool, then the back.

2) *Standard bottom board* with the hive centered on 8" x 16" concrete blocks.

C = 1.2



With a hive on a bottom board, which sits on blocks, C = 1.2



If the hive sits on any flat surface, pallet, the ground or a hive stand, C = 1.0.

3) *Any* hive sitting on a flat surface.

C = 1.0

Using this procedure for the case of a hive on a *hive stand* resting on concrete blocks, the proper constant is **C = 1.3.** Thus, if it took 41 lb. to tilt the hive from the front **F**, and 53 lb. to tilt the hive from the rear **R**, the hive weight is simply: W= C x (F + R) = 1.3 x (41 + 53) = 122 lb. If the hive were supported on a standard bottom board C = 1.2 would be the proper value of the constant.

But, for *any* hive resting on a flat surface C = 1.0 would be the proper constant. If such a hive needed 55 lb. to tilt it from the front **F**, and 68 lb. to tip it from the rear **R**, the hive weight would be:

W = 1.0 x (55 + 68) = 123 lb.

Note that in this type of situation, the hive weight is simply the sum of the front and rear forces added together.

The procedure is both quick and simple. The weight take-off that a hive experiences during a spring honey flow, or the weight differences which exist between hives, are immediately evident and measurable, all without disturbing the hive. And it is no longer a chore to monitor the weights of hives during the fall, as preparations are being made for winter. □

Grow Your Own

Yes, you can grow your own Bee pasture, and you don't need a lot of land or expensive equipment. This month we'll look at the best crops to grow (for most of the U.S.). Next time – how to grow them on a shoestring budget.

JAMES L. TABOR

It has been generally believed that it is not economically feasible to grow one's own bee pasture. The assumption was that the revenues derived from the sale of honey obtained from the cultivation of honey plants would not cover the cost of labor, fertilizer, lime, seed, preparing the seedbed, seeding and rolling – much less yield a profit.

However, some beekeepers have shown that by selecting the right plants, and by using some production shortcuts growing pasture exclusively for nectar production can be cost effective.

But unless you have an agricultural background, you may be a bit skeptical.

"Grow forage for my bees? Come on, you must be joking. I only own a couple of acres and don't know the first thing about farming", is a typical response.

Take heart. It is possible to grow at least some of your own bee pasture with only a little equipment, limited agricultural knowledge and a modest outlay of effort and money. It can be a practical enterprise if you own just a few thousand square feet of growing space or substantial acreage.

After I retired my wife and I bought an old farm with a woodlot and 14 acres of open fields in Naples, Maine.

It hadn't been farmed for over 30 years, the land was pretty well run out, and the junipers and poplars had already started their inexorable encroachment on the fields. The soil, a fine sandy loam, had a pH range of 5.2 to 5.5 with significant deficiencies in nitrogen as well as phosphorous and potassium.

I wanted to reclaim and utilize the fields but I was not sure how this could be accomplished. Not being a gentleman farmer with unlimited resources, there were few options.

The hay crop they grew on the land each year was of poor quality and sparse. It didn't even pay a local dairy farmer to cut, bale and cart it away for what he could get out of it. And I couldn't afford to have somebody lime, fertilize and reseed the acreage to "bring it back"

I thought about growing Christmas trees. They entail considerable expense and effort initially, and there are risks for years afterwards. So after extensive reading and consulting with the University of Maine Extension Service, it became apparent to me that growing one or more species of clover would be a good way to go. Not only would the clover enrich my soil but the added benefit was that it would also provide much needed bee pasture. The question then became – how could I do it with a nominal cash outlay and a reasonable input of labor?

There are books and books worth of information on cultivating legumes for pasture, silage and green manure, but I found little material to help someone who wanted to grow clover "on a shoe string" for bee pasture. And when you think about it, the reasons are fairly obvious. Although it might be economically feasible for a dairy farmer to spend $250 to $350/ac for soil amendments, plowing, dragging, seeding and rolling, it would be difficult for a beekeeper to justify this kind of expense. Farmers have a tremendous economic edge over beekeepers. Because they operate on a large scale farmers can usually afford considerable capital expenditures for equipment that can be amortized over an extended period of time. And, they have business revenues many times greater than those that can be realized by one who makes and sells honey.

Furthermore, a farmer's objectives are different from a beekeepers. The farmer, who plants clover to enhance the soil's nitrogen, wants to

*You **DON'T** need big, fancy and expensive equipment to help your bees along.*

Continued on Next Page

The Sweet Clovers, white & yellow, are ideal, but you need to staggar plantings because they are biennial.

GROW ... Cont. From Page 491

turn the crop under when it reaches maturity. But the beekeeper wants to maintain blossoming as long as possible. And, a dairy farmer knows an exclusive clover diet does not provide livestock with balanced nutrients, (and in fact, can cause bloating). Pastures are planted with a mixture of grasses such as timothy, ryegrass, bromgrass and orchard grass, clover being a relatively modest increment. Conversely, the more clover the better for the keeper of bees.

This is not to say that beekeepers have nothing in common with traditional farmers, and cannot learn from them. There is much those who have dedicated their working lives to tilling the soil can pass along to us. They know soils, and how to improve them. They know the techniques for seedbed preparation; procedures for seeding, and broadcasting soil amendments. They are familiar with the use of legume inoculates and equipment preformance. Also, professional farmers can be helpful with growing tips and information on the control of insects and disease – especially in your local area. There are also basic fundamentals in cultivating any crop that are applicable no matter how, when and why it is grown. If you want to grow bee pasture take advantage of any agricultural expertise available. But after all is said and done, if you want to grow bee pasture economically you will pretty much have to learn the "tricks of the trade" through trial and error – as I have.

Given differences in soil conditions, regional climates and seasonal variations, the techniques and procedures discussed here and used should not be taken as gospel or as a blueprint for sure-fire success in growing bee pasture where you live. I've taken some lumps along the way and still have a lot to learn.

Practical & Productive Honey Plants

There are probably hundreds of good nectar producing plants that can be grown successfully; however, relatively few are easy to grow, without fairly exacting soil requirements and still provide good, dependable nectar yields over a period of weeks rather than just a few days.

Probably the best practical honey plants for "fixed land" bee pasture are the biennial yellow and white sweet clovers; annual Hubam sweet clover and alsike and ladino clovers.

Three other crops which might work, at least in some parts of the country, are buckwheat, canola and birdsfoot trefoil.

Buckwheat honey is heavy bodied, dark and has a strong flavor, and people who like mild, clover-type honeys rarely go for it. Canola is both productive and increasing in popularity, but it, too, has some limitations which are discussed below.

Based on my three year's experience with birdsfoot trefoil on a three thousand square foot trial plot, I would say it can be a valuable adjunct to clover bee pasture. Its cultivation, however, is not recommended south of a line drawn from the eastern tip of the Nebraska-Kansas border to the east coast except at higher elevations in the Appalachian Mountains. According to the U.S. Department of Agriculture, stands south of this line are susceptible to significant crown and root rot disease.

A Look At The Winners

Before we get into the specifics of where to plant, seedbed preparation, how to plant and with what equipment, (which we'll cover next month), let's consider the characteristics and growing requirements of the prime nectar producing species.

Alsike clover is a premium crop, and produces excellent honey.

Biennial Yellow Sweet Clover (*Melilotus officinalis*) Yellow sweet clover grows four to five feet tall. It blooms around the second week in June in Maine and stays in full flower for about six weeks, longer when weather permits. It can prosper on a wide range of soil *types* but acidity is critical. The pH must be at least 6.0, preferably closer to 7.0. An adequate to good phospherous and potassium level is advantageous. Since they are extremely deep rooted, the sweet clovers can withstand drought conditions quite well once established; however, adequate moisture is critical for germination and early plant development.

If you want to feed sweet clover to cattle though, be careful. Most varieties can cause *sweet clover poisoning*, an affliction which causes internal bleeding that can be fatal. Some of the newer varieties which do not contain coumarin, the cause of this malady, are safe to feed, however.

Buckwheat is easy to grow and makes good green manure. It quits producing nectar about lunch time though, and if your bees are dependant on it, they can get a bit testy.

Biennial White Sweet Clover (*Melilotus alba*) Flowering approximately two weeks later than the yellow variety white sweet clover grows up to six feet tall. In all other respects, however, its characteristics and growing requirements are similar to those of yellow.

Annual Hubam Sweet Clover (*Melilotus annua*) Somewhat smaller than the biennial sweet clovers, this white blossom legume flowers in August when frost seeded or planted in the spring. It, too, stays in bloom for around six weeks with some flowers holding on until the last of September.

The good news is that Hubam comes on line about the time other bee pasture is winding down. The bad news is weather conditions during August and September are less favorable for clover nectar yields than would be the case if it matured in June or July – at least in Maine. Inspite of this, Hubam can be a big help in holding honey stores at July levels until bees start working the goldenrods and asters of fall.

Many beekeepers give the sweet clovers top billing because they have more blossoms per square foot than either alsike and ladino, and bees visit them well into the evening – weather permitting.

But if sweet clover makes such prime bee pasture, why bother to plant anything else? Well, for one thing, yellow and white sweet clover are both biennials. They both die the second year after seeding. Alsike will usually last two – even three years before it starts to decline and Ladino often does better. Furthermore, diversity in bee pasture is always welcome because the nectar flow from one species at any given time is as unpredictable as the weather which enhances, or retards the flow.

Alsike Clover (*Trifolium hybridium*) Alsike is the most adaptable of all the clovers. It has a pinkish-white blossom and grows to between six inches and two feet. It does well on poorly drained soil of low fertility and, unlike most other clover species, is not overly sensitive to acidity. It grows on soils with a pH range of 5.3 to 7.0.

Alsike clover normally starts to bloom between the middle and last of June in Maine, and flowering lasts four to six weeks. However, under drought conditions it may stop even sooner than that. When frost seeded during the winter or early spring, or planted by conventional tillage in May, it can bloom in August its first year.

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Pollination hives sitting in a field of Ladino clover.

Birdsfoot Trefoil – Buds, flowers and seed pod.

GROW ... Cont. From Page 493

Ladino Clover (*Trifolium repens Formo Lodigense*) Ladino has a white blossom and leaves which are considerably larger than those of Dutch white clover. It blossoms around the first or second week in June and stays in flower for five to six weeks unless cut short by hot dry weather. Ladino does well in a moist, fertile soil – preferably clay or loam. It especially likes potash and should have a soil with a pH in the 5.7 to 7.0 range.

Canola (*Brassica Spp.*) Although canola has been extensively raised for oil and forage, and has been a popular source of nectar in several Canadian provinces since the mid 1950's, its potential for bee pasture is only beginning to grow in importance in the United States.

Canola is a cultivar of rape, in the same family as mustard and cabbage, and it is very hardy and thrives in cool weather. It grows from three to four feet tall and, depending on the variety, flowers from 30 to 60 days after planting (when spring planting) and remains in bloom from three to four weeks under favorable conditions. Soils with medium fertility levels are satisfactory for its culture.

Bees work canola enthusiastically, even in early mornings, and continue to mid to late day and even when temperatures are in the low 60's. However, soils with a pH below 6.0 – particularly those near 5.0, have certain nutritional and/or toxicity problems which may restrict flowering and yields.

Even though it is an annual, canola readily reseeds itself. Herein lies one of its major liabilities for beekeepers. Unless fully mature plants, which have set seeds, are harvested or blossoms are cut down before they become seeds a stand will usually perpetuate itself for several years. This is both good and bad. Thick stands will choke out most weeds, and if plowed or tilled under early in he second year, will result in a relatively weed free plot. However, reseeding will continue until you stop the flower cycle.

You can't control seed development and volunteer growth while maximizing nectar production. Like most seed-setting plants, flowering is staggered. Some individual plants will have completed their budding, flowering and seed formation cycle as others are just beginning the process. Consequently, cutting down the initial blossoms when they stop yielding nectar and before they set seeds inhibits the total nectar potential.

So what is the practicality of growing canola exclusively for bee pasture? Before we answer this question, consider two of its disadvantages. First, honey produced from canola nectar crystalizes almost instantly and the honey produced is often considered non-table grade because of its unique flavor. In view of its propensity for crystalizing, it would be unwise to grow this crop to produce comb honey or if processing surplus honey isn't possible immediately. Canadian beekeepers customarily remove canola honey two or three times during the season (average yields are in the 150 - 200 pound range) so it can be promptly extracted before crystallization in the comb occurs.

Unless canola represents the major source of nectar, the flavor is not a significant problem and can be avoided altogether if you use one of the newer, low erucic acid cultivars; for example some strains of *B. napus* such as Westar and Tower or of *B. Campestris* – Tobin, are grown.

The production of canola honey is made-to-order for one who opts to sell creamed honey or honey for commercial uses. It is really quite easy to grow, too. The same techniques used for cultivating clover on a conventionally tilled seedbed (as described next month), are used to grow canola. Incidentally, it lends itself to staggered plantings and interplanting different varieties with varying maturities.

I have had good results from successive plantings of interplanted Argentine (*B. napus*) and Polish canola (*B. campestris*) on May 13, June 2, and June 20, in Maine. If you elect to grow this honey plant and want to control natural reseeding, be willing to cut down volunteer growth the following season before it sets seed. Otherwise, short of using a herbicide, there is no way it can be eradicated unless, of course, it is pulled up by hand, or tilled or plowed under.

Buckwheat (*Fagopyrum esculentum*) Buckwheat's redeeming features are that it is easy to grow, matures fast, is a superb green manure and will thrive in just about any kind of soil. It grows best and produces more nectar in a cool

moist climate. Buckwheat is especially good for holding down grass and weeds in newly cultivated soil. Given adequate moisture this crop will come to full flower about five weeks after planting. And in most environments it is possible to make two plantings per season. Like canola, if allowed to reach full maturity and go to seed there can be substantial volunteer growth the following season.

Birdsfoot Trefoil (*Lotus corniculatus*) The U.S. Dept. of Agriculture says that this legume does well in soils less fertile than required for alfalfa. Soils can be heavily textured, have high clay, saline or alkaline content, but need good surface drainage. It will grow in a pH range of 5.2 to 7.0.

My first attempt at growing birdsfoot trefoil using frost seeding resulted in no germination. But then, three years ago I tried again in mid-May on a plot which I had grown canola the previous season. To prepare the seedbed I merely harrowed the stubble in the spring just before planting. (Note: don't expect any results from broadcasting birdsfoot trefoil on harrowed *sod*. The only reason I was successful in this endeavor was that the canola choked out competing vegetation, so in effect I was seeding on ground with no other plant growth.) Although sometimes it is difficult to get birdsfoot trefoil to germinate, this 12 to 30 inch perennial, once established, will prosper and blossom during droughty conditions. It grows well mid summer after clover has dried up.

During the height of the clover season bees do not work birdsfoot trefoil as consistently or as energetically as they do the clovers. But it usually draws at least some attention even after clover has passed its peak. ☐

Now that you have digested what plants will work for land based honey production, next month Mr. Tabor covers where to plant them, soil requirements and preparation, the equipment needed, seeds and seeding, plot sizes and planting strategies. When finished, you will have the basics of both the art and science of this craft, so don't miss next month.

A NEW & BETTER WAY

MAKE MEAD

This year try making mead, but use pollen instead of chemical additives. You'll be pleasantly surprised with the results.

ROBERT BERTHOLD, JR.

Soon after taking off my first honey crop many years ago, the idea of making mead caught my fancy. Although my grandfather had made wine for many years, I never took an interest in his activity, so I started out in complete ignorance. My first attempt consisted of taking the worst flavored honey I had, diluting it with *some* water, getting some bakers yeast from my mother, and putting this alchemist's mixture in an open crock. There was some fermentation, as well as a superior growth of mold on the surface of the liquid, and the resultant "material" was ultimately thrown out.

Not being one to give up, I next wrote to the USDA and they sent me a copy of their booklet on mead making. My next attempt included adding nutrients to the mix, precise dilution of the honey with water, and the use of a fermentation lock. For this second try I still used over-heated (burned) honey and bakers yeast. When the fermentative process had ended, the resultant product had the bouquet of burnt bread. We bottled this batch of poor tasting mead and moved it from grad school apartment to grad school apartment, and then on to Doylestown when I began teaching. When we were moving into our first home, we thought about throwing away the well-traveled bottles, but we decided to open one and give it another taste. Important lesson number *three* in mead making, with lessons number one and two being – use table grade honey and yeast designed for making mead – mead improves markedly with age.

Over the years I have made many batches of mead of varying qualities. I have collected a number of pamphlets and books dealing with this product as well as attending some excellent mead-making workshops. One thing which has caused me some concern was obtaining and using the nutrients used in most mead recipes. Commonly – ammonium phosphate, urea, cream of tartar, and tartaric and citric acids. Early on the only place I could find these was from a biological supply house in relatively large sized containers. Later, I found that some wine supply stores had them in small quantities, and also certain wine nutrient tablets worked well. But the idea of putting all these *chemicals* into the mead I was making was disturbing.

A few years ago, however, a new concept in mead nutrients "dawned" on me, which to date I have been unable to find reference to in the literature. This happened during a presentation by Dr. Fred Beam, an undergraduate and graduate school friend who is serving as a missionary in Kenya.

Fred was back in the states on furlough, and our

Continued on Next Page

MEAD ... Cont. From Page 497

family went to hear him speak at a church nearby. He mentioned how the social structure in outback Kenya was deteriorating because the government passed stringent hunting laws affecting everyone. Since prehistoric times men of the native tribes occupied themselves with hunting game, while the women took care of child rearing and maintenance of the homefront. When the new law was passed the men could no longer hunt and spent their time in boredom at home. This lead to serious problems with alcoholism.

Dr. Beam informed us that their primary alcoholic drink is mead. He described how they made their mead, simply by crushing the combs containing honey, brood, and pollen, and mixing it with water and allowing this mixture to ferment. After this comment, I immediately began to wonder if we could make mead using pollen as the nutrient source.

> "We've made at least 10 batches of mead using pollen as the Nutrient Source, and every bottle has been quite acceptable."

We started experimenting with this a couple of years ago, with what we feel were good results, but we wanted to put our product to an "acid test". To this end, we entered a bottle of our mead made entirely with pollen as the nutrient source in the 1990 EAS competition, and our entry placed second in a highly competitive show.

General Guidelines For Mead Making

Much published information makes the process of making mead quite "mysterious", when in fact all the mead maker is doing is manipulating the ingredients and conditions for fermentation to control the quality of the final product, and then letting Mother Nature do her thing.

Simply put ...

NOTEBOOK: Things that may seem insignificant, such as the water used to dilute the honey, or a difference in the temperature at which the fermentation occurs, can play a major roll in the final product. I suggest you keep a diary of what you do for *each* batch of mead you make. The final product should be labeled so you have a record of what you did to produce that bottle.

HONEY: The importance of the quality of the honey you choose cannot be overemphasized. The inclination to use a non-table grade honey, such as that from the cappings melter, will result in a product with a "robust" flavor. A number of years ago a local beekeeper made two batches of mead using clover honey for one and orange blossom honey for the other. I was at his home the day he was bottling the meads and they compared favorably with fine table wines even before they had time to age.

The sweetness of your mead depends or both the type of honey you use and its concentration. Some honeys are sweeter than others. We have found that three pounds of honey mixed with three quarts of water produces a dry (not sweet) mead. And, four pounds of honey with enough water to make a gallon will produce a sweet mead. Since mead making is more of an art than a science, some experimentation on your part may be necessary to produce the mead most to your liking.

WATER: Water is an often overlooked factor in mead making. Water can vary appreciably in respect to its mineral content and other attributes. These factors can influence the action of the yeasts as well as the final flavor. Some mead makers obtain well water or use bottled water from a supermarket.

YEAST: To assure a palatable mead, naturally occurring and bakery yeasts ***should be avoided***. We have found the acid-tolerant champagne yeasts lend themselves perfectly to mead making.

DISSOLVING THE HONEY: For many years, I dissolved honey in water by shaking the container. This got to be quite a challenge when using five gallon containers. But my wife mentioned how easy it was by using warm water and an electric beater. Problem solved.

If you want a crystal clear mead, the honey-water mixture should be brought to a boil. The reason for this is that heat precipitates the proteins naturally found in honey so they settle out. Otherwise they will cause the mead to be cloudy.

STERILANTS: To prevent undesirable yeasts from spoiling your efforts, your honey-water-nutrient mixture should be sterilized in the container in which it is going to be fermented before the commercial yeast is added. This can most easily be accomplished using sulfur dioxide.

Sulfur dioxide producing tablets are available from most wine making supply stores, often called bisulfite and camphaden. The sulfur dioxide released from these materials is very short lived, so there should be no concern about the final product with sulfur dioxide. Also, prior to bottling, sulfur dioxide should be used to sterilize your siphon, your bottles, and your corks or bottle caps.

Making Mead With, and Without Pollen

Most research on mead making has involved using non-pollen nutrients. Since honey is composed primarily of sugars and water (with traces of vitamins, minerals and other substances), it is necessary to add nutrients to sustain the growth of the yeast. These nutrients are often available from wine supply stores and catalog suppliers. For mead, urea, ammonium phosphate, and cream of tartar are the usual nutrients added. Even though honey is highly acidic, the

actual amount of acid is low. Therefore, to enhance the fermentative process and to prolong the keeping property of the resulting mead, acids such as tartaric and citric are generally added to the initial mixture. A general recipe for mead is as follows:

3 lbs. honey
3 quarts of water
*5 grams (about 3/4 teaspoon) cream of tartar
*5 grams (about 3/4 teaspoon) ammonium phosphate
*5 grams (about 3/4 teaspoon) urea
*2 grams (about 1/3 teaspoon) tartaric acid
*2 grams (about 1/3 teaspoon) citric acid

*A theoretical problem with using pollen as the nutrient source for making mead is that pollens vary appreciably in their nutrient content. However, to date we have made at least 10 different batches of mead using different sources of pollen ranging from what we have collected ourselves to that commercially purchased with the resulting mead produced in each instance being quite acceptable. Although we have not experimented extensively, we've found most pollens work equally well. To substitute pollen for the ammonium phosphate, urea, tartaric and citric acids, add five tablespoons of clean pollen per gallon of mixture.

Fermentation Containers: Mead can be made in just about any type of container, but I prefer to use glass containers with narrow necks. Old cider or vinegar jugs work fine for small batches, and five gallon jugs obtained from companies supplying bottled water can be used for larger batches. These bottled water companies often have jugs with slightly chipped tops at reduced costs. For a source of these bottles, check your local Yellow Pages under "Bottled Water".

Fermentation Lock: Once the fermentation process has started it is important to exclude any foreign yeasts which could contaminate your ferment and produce a substandard mead. Oxygen must also be excluded, because if it is present during the later stages of the process vinegar will result.

In addition to commercially available fermentation locks, the same effect can be accomplished by inserting a plug of cotton in the mouth of the fermentation container, or covering the mouth of the container with a balloon in which a small hole has been pierced. Additional methods are listed in wine making books.

Temperature: Although not absolutely critical, the ideal temperature for mead fermentation is between 65° and 70°F. The lower the temperature below 65°F the longer the process will take. This increase the likelihood of unwanted yeasts getting into the fermentation container and adversely effecting the end product.

Also, if the temperature drops too low, the fermentation process will be prohibited. As the temperature increases above 70°F, fermentation proceeds more rapidly with a generally proportionate decrease in the amount of alcohol. When all factors are ideal, it is possible to produce a mead with up to 15% (30 proof) alcohol content.

Racking: Racking is the technical term used for the separation of the mead from the dead yeast cells which accumulate during the process of fermentation. Most mead making books suggest leaving the vessel stand for a period of months after fermentation is complete to allow the dead yeast cells to settle to the bottom of the vessel. The problem we have found with this method is that often the mead in the container will pick up the bitter flavor of the dead yeast cells.

One solution is racking, or siphoning off the mead from the initial container into a second container which has been sterilized, using one of the sulfur dioxide products, after the fermentative process had slowed down but not yet stopped. This leaves the bulk of the dead yeast bodies in the original bottle, with a marked reduction in the bitterness of the resultant mead.

After a couple of months the resultant mead can be racked into bottles which also have been sterilized with sulfur dioxide and the bottles should then be closed with corks or caps which have likewise been treated.

Aging: The bouquet (flavor) of mead greatly improves with age with the maximum benefit being achieved after about three years. It has been suggested that mead should be aged at least 18 months before it is used, though most of us are not that patient.

We suggest that every time you make a batch of mead you date and set aside one bottle not to be sampled until at least its third anniversary. Doing this has converted many of us to making larger batches of mead and putting more and more bottles away for future use after proper aging.

Bottoms Up

Keep a record of all ingredients and steps used. Try replacing standard nutrients with pollen. Use an electric beater to blend honey and warm water. Place mixture in fermentation vessel. Add sulfur dioxide producing materials to sterilize solution. Use acid tolerant champagne yeast. Exclude oxygen and foreign yeast from the fermentation container by using a fermentation lock. Store between 65° and 70°F. Siphon into a new fermentation vessel when the rate of fermentation in the original vessel begins to slow to eliminate the majority of the bitter taste-producing dead yeast bodies. After the fermentation process is complete, allow dead yeast bodies to settle out for a couple of months. Siphon off the clear mead into bottles being sure to sterilize the siphon, bottles, and the bottle closures with a sulfur dioxide solution. Ideally store mead for at least 18 months for maximum flavor improvement. Enjoy! □

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Beauty and the Bees

B.A. STRINGER

Late in the year, after the main honey flows and before the first frost, flowers of Michaelmas Daisies are actively worked by bees. These useful plants grow three to four feet tall, flowering prolifically in summer and fall. Several honey bees may be seen on a single bloom, collecting both nectar and pollen.

Michaelmas Daisies are not daisies at all, but are actually perennial asters, derived from native north American species. They were bred as selections from crosses of New England Asters *(Aster novae-angliae)*, with New York Asters *(A. novi-belgii)*. The common name refers to the feast of Saint Michael, the archangel, celebrated on September 29, at which late date in the floral year these flowers are still in bloom.

These plants of the Aster genus have spear-shaped

Michaelmas Daisy

leaves and daisy-like flowers. 'Aster' is Latin for Star, referring to the flowers. The plants are in the Daisy Family, or Compositae, one of the largest plant families. All Compositae have tightly clustered flowers forming heads, which contain two types of flowers. In the center of the head are closely-bunched tiny *disc flowers*, with an edging of larger petal-bearing *ray flowers*. Daisies and sunflowers have typical Composite flower forms.

Easy to grow and resistant to diseases and insect pests, Michaelmas Daisies flourish in most soils, given regular water and adequate sun. Individual plants have a strong root system which quickly forms a dense clump. Because the older center part of the clump declines in vigor, the entire mass should be dug up and divided each year. Only the strong young shoots from the outside edge of the clump should be replanted, and the woody center discarded. Division of the plant is most successful when done in late fall or early spring, when the plants are not actively growing. Because Michaelmas Daisies are derived from hybrid parents, they rarely set viable seed, and vegetative propagation (clump division) is used to increase the plants.

Aster novi-belgii L.

Many varieties of these hardy plants are available from plant nurseries. Flower colors range from the common blues, violets and purples through red, maroon, several shades of pink and white. The flowers are borne in loose terminal clusters, with each flower about two inches in diameter.

After frosts kill the top growth, the standing woody stalks should be cut or snapped off close to the crown. New shoots will emerge from the overwintered crown in early spring.

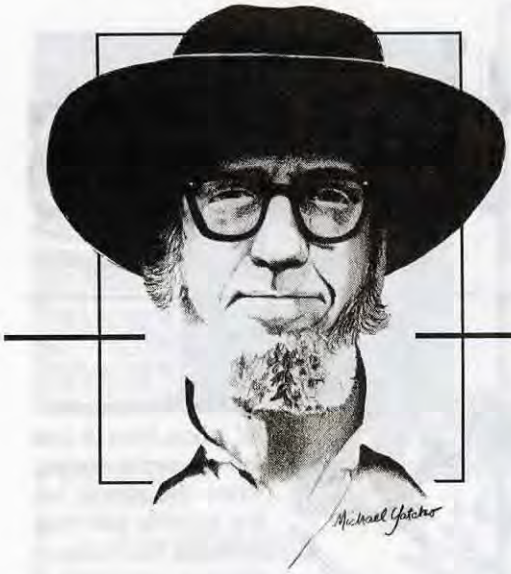
These sturdy plants are useful as background color in wide garden borders, and also as intermediates between shrubs and smaller plants.

There are over 600 kinds of Asters, native to Europe and America. They range from small mounding alpine plants to branched six-footers, all of which are hardy perennials. The annual garden aster, or China Aster, is an entirely different genus, *Callistephus chinensis*.

Aster novae-angliae L.

Michaelmas Daisies are reliable perennial producers of nectar and pollen in the garden. They may contribute to the colony's supply of food late in the year and they will certainly add to your garden's beauty.

B.A. Stringer would be happy to advise or assist with your home landscape – bee plant arrangements. Send a S.A.S.E. with your questions to B.A. Stringer, P.O. Box 511, Blodgett, OR 97326



BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"Here's an overview of wax moth, a nasty little beast."

I think I have never, except incidentally, talked about wax moths on this page. It is not hard to understand why. They are not an inspiring subject. But they are important, and its about time I got around to talking about them, especially since there is still a lot of misunderstanding here.

Wax moths are usually included among the many enemies of bees, but this is misleading. The larvae of wax moths are essentially scavengers, and they pose no threat at all to a normal strong colony of bees. And the term "wax worm" is a misnomer. These larvae are not looking for beeswax, as such, to consume, but rather the protein found in honey combs, especially pollen and dead brood. They never attack a block of beeswax, and foundation is only superficially damaged by them, even when adjacent combs are totally demolished.

Sometimes a beekeeper, finding one of his hives filled with wax worms, cocoons and moths, infers that the moths invaded his colony and killed it off. But that is not really what happened. Actually a colony becomes weakened by some aberrant condition – usually by queenlessness followed by laying workers – and then, as it begins to decline, the wax worms take advantage of the weakness and gain the upper hand. Things then move very quickly indeed. You come upon a hive which, the last time you saw it, seemed normal, at least to external appearance, and now it is a smelly, web-laden mass of worms and cocoons, with perhaps a dozen or so listless and demoralized bees still surviving. It is a dispiriting discovery.

There are at least two distinct species of moth whose larvae attack honey combs. They, and their larvae, resemble each other exactly except for size, and are accordingly called the greater and the lesser wax moth. The former is a regular size "moth miller", as we used to call them, while the other is about the size of a clothes moth. What is distinctive of the larvae is their speed. They move very quickly. The greater moth is generally attracted to brood combs, especially old dark ones, while the lesser one is attracted to comb honey.

The way to keep wax worms out of your hives is simply to have strong colonies, and make sure they don't go queenless or succumb to a progressive disease, such as American foulbrood. Actually, the eggs of the wax moth are almost always present, especially late in the season, but a strong colony keeps the larvae in check. Sometimes, even in a very strong colony, you will be astonished to find a large wax worm burrowing through a brood comb, deep in the comb where the bees cannot get at him. It is an impressive testimony to his power of survival. Of course a single such worm does no significant damage.

The moths fly at night and seek cover by day. They probably lay their eggs along cracks in beehives, and the tiny larvae then crawl in. If you have old brood combs in your honey house for awhile, and go in there some night and snap on the light, you are apt to find lots of wax moths flying about. You will also smell them, as their pheromone of sexual attraction is very pungent and unpleasant.

The greater wax worms sometimes do great damage to stored extracting combs, even before the honey has been removed. Supers should accordingly be extracted fairly soon, and not left stacked in the honey house more than about a week.

Beekeepers sometimes use paradichlorobenzene crystals to protect stored combs from wax worms. These crystals are a common fumigant against clothes moths, and can be purchased anywhere. There is, however, a better way, and that is exposure of the combs to fresh air and daylight. Wax worms thrive only in confinement and darkness. Thus if supers are stacked in such a way that air circulates through the combs, and at least a little daylight can get in, wax worms will not attack them in any significant numbers. Some beekeepers, for example, store their supers on end, with space between them, rather than stacking them up. And I have seen the following system used with excellent results: The supers are stacked, a few to a pile, and staggered so as to let fresh air and some light in, over a wire and wood frame, with a roof to protect against rain, on the north side of a building, where it is coolest. The wire screen on the frame is of a size to keep mice out, but allow bees to pass through. The bees soon clean the supers nice and dry, and the fresh air and light inhibit wax worms. This outdoor storage is also a good precaution against fire.

The effectiveness of exposure to light and air in preventing wax worm damage was once made very evident to me by the following: An old, discarded brood comb lay on my barn floor for several weeks. When I finally picked it

up I found the underside demolished and covered with the frass and filth of wax worms; while the upper side was entirely undamaged.

Exposure to cold also inhibits wax worms. In fact even the eggs are killed at 0°F. Thus wax worm problems are put to an end by the arrival of winter. The problem is most acute in late summer, when the days and nights are still warm and the moths have had time to multiply to great numbers. It is seldom a problem before July, because the moth population is still small.

I do not know how wax moths survive the winter, but some apparently do. Perhaps the adult moths withdraw somehow. Some people think they do not survive, but come up each spring from the south, but I find this hard to believe.

The lesser wax moth is a primary pest for the comb honey beekeeper. The larvae crawl along the surface of the combs and chew little holes, rendering the honey section utterly worthless. The wax worms get into the supers even before it is harvested, but can do no damage to the comb honey so long as the bees are there. The problem begins after the supers have been harvested and brought inside. Sometimes, when you remove round sections from the frames, you will find a waxy kind of dust around the bottom of the section in the frame. This means that wax worms are there, even when too few and too tiny to notice. This evidence of their presence increases as the summer advances, and one must be particularly vigilant in late summer. But the solution to the problem is very simple, and I have described it many times. You simply bag the sections in plastic bags and put them in a freezer for a few days, until the temperature approaches 0°F, then let them return to room temperature before taking them from the bags. You can handle even a couple thousand sections this way with only a small freezer, as they need to be kept there only a few days. It is a complete and totally safe solution to the problem. □

(Comments and questions are welcomed. Use address above and enclose a stamped envelope for a response.)

QUESTIONS? ANSWERS!

Richard Taylor

Now, or later?

Q. Can I make splits in early September or should I wait until next spring?

James Midkiff
Mt. Airy, NC

A. Wait until spring. A strong, well-provisioned colony is a hundred times better for wintering than two weaker colonies.

High Price?

Q. In the October, 1990 issue you showed a picture of supers stacked near an apiary for the bees to lick dry. I tried that and found a lot of dead bees around the supers afterwards. How come?

Ralph Houghtalong
Corning, NY

A. Exposing sticky combs near an apiary produces a feeding frenzy, similar to robbing, and results in large numbers of bees being killed. This is, nevertheless, a good way to rid supers of stickiness, and does not spread disease provided the colonies in the apiary are healthy.

Weighty Problem

Q. Twice I have had colonies on grain store scales, and both times the bees were extremely aggressive. Does the fact that they were on scales make them aggressive, due to the motion of the hive up and down or sideways?

Preston L. Loveless, Jr.
Annandale, VA

A. I cannot believe that the temperament of a colony would in any way be affected by the extremely slight and gradual motion of platform scales. I usually have a colony on scales, and have never noticed any difference.

Pollen Packaging

Q. What processing does pollen require after it is taken from the traps?

Clifford Jackson
Trenton, SC

A. None, other than to remove any bits of foreign matter, such as an occasional wing or leg of a bee, etc. After harvesting it must be protected from wax worms and from mold. It should be dried out in a warm, dry room, and preferably frozen before being packed in well-sealed containers.

Mating Flights

Q. I understand that a virgin queen makes several mating flights. Does she mate more than once on any individual mating flight, or does she return to the hive after each encounter with a drone?

Charles M. McDonald
Baton Rouge, LA

A. The queen is likely to mate with a succession of drones on each mating flight.

Good For Feed

Q. I have four gallons of purchased honey that I scorched by letting it heat too long, so it is not fit for food. Could I feed it back to the bees, after diluting about one part water to two parts honey?

Robert McCarty
Sedalia, MO

A. That is what I would do. Feed it fast, so it cannot ferment after dilution. I think the danger of introducing AFB would be minimal, especially if you feed it all to just one or two hives.

Start Right

Q. I want to turn my beeswax into candles, but it is not the bright yellow I should like. How can I improve the color – by dye, bleaching, adding color, or what?

Clarence Susek
New Kensington, PA

A. Beeswax can to some extent be bleached by exposing thin strips to bright sunshine, but this will not produce the bright yellow that is sought, nor, I think, will dye or color additives. The best way to get bright yellow beeswax is to start with cappings wax, and then, most important, melt it in the right sort of container, namely, something well tinned, like a topless 60-lb. can, and not a vessel of iron, copper, etc. Beeswax reacts with many metals and becomes discolored. Alternatively, one can, starting with cappings wax, melt it in a solar extractor, again avoiding contact with metals. This makes very nice wax.

Late Meal

Q. How late in the season can I feed sugar syrup without causing excess moisture in the hive during winter?

Richard Stewart
North Creek, NY

A. I have never heard that feeding sugar syrup causes excess moisture in a hive. In general, bees can be given syrup as long as they are still active, that is, flying to and from the hive at least once or twice a week, and before they go into winter cluster.

(Questions are welcomed. Address: Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing a stamped envelope.)

GLEANINGS GLOBE

JULY, 1990 ALL THE NEWS THAT FITS

NATIONAL HONEY MONTH
September 1991

By the Secretary of Agriculture of the United States of America

A PROCLAMATION

U.S. Secretary of Agriculture Edward Madigan has joined the National Honey Board to proclaim September as National Honey Month.

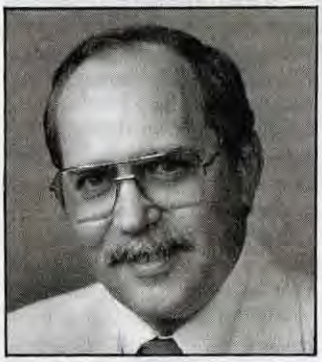
In his proclamation, Madigan recognized the importance of the beekeeping industry to the agricultural economy. Approximately one-third of the human diet is benefitted directly or indirectly from crops pollinated by honey bees.

Madigan encouraged all Americans to enjoy the natural taste of honey and honey products. Honey is used by millions of Americans as an ingredient, topping or a sweetener. And, honey is a wholesome ingredient in manufactured foods such as ice cream, bread, salad dressing, crackers and candies.

Throughout September, join with the National Honey Board in celebrating mankind's oldest sweetener. Promote and publicize honey for National Honey Month.

June Meeting Turnover
HONEY BOARD ELECTIONS

The National Honey Board elected Bill Gamber, Binford Weaver and Steve Klein as officers and Dale Bauer and Neil Miller as members to the Executive Committee during the Board's annual meeting in Denver, June 28.



Bill Gamber

Bill Gamber, vice president of Dutch Gold Honey, Inc. in Lancaster, PA, was elected as chairperson of the National Honey Board. As chairperson, Gamber presides at Board meetings and supervises all Board activities. Gamber previously served as vice chairperson.

Gamber is replacing Dwight Stoller, whose term on the Honey Board expired March 31.

Binford Weaver, a producer from Navasota, TX, was elected as vice chairperson. Steve Klein, a producer from Marshall, MN, was re-elected as secretary/treasurer.

Also elected to serve on the Executive Committee were Dale Bauer, Fertile, MN, and Neil Miller, Blackfoot, ID.

AHP HIRES CONNOR

The Executive Board of the American Honey Producers Association, Inc., has hired Dr. Lawrence J. Connor of Cheshire, CT to serve as the new Executive Secretary of their organization. Dr. Connor replaces Ray Chancey of Dayton, TX, who requested the change so he could spend more time with his personal business.

AHPA president Richard Adee of Bruce, South Dakota, said that "Dr. Connor has been hired to provide services to our growing membership, and to allow Ray Chancey, other executive board members, and myself, to carry out our work on our many projects", Chancey will continue to serve as program chairman for the annual AHPA convention.

"During the past 2-1/2 years, the AHPA has doubled its membership," Adee added. "This means we need someone to concentrate on their needs. During this time we had an arrangement with Dr. Connor to produce *The Honey Producer Magazine*, a top-quality publication completely supported by advertising income. That's the kind of management skill we need to help the AHPA do its job," Adee said.

A popular lecturer and short-course coordinator, Connor annually conducts short courses for the Eastern Apicultural Society and the TX Beekeepers Assn'

"I need to make it clear to my current customers and subscribers that the AHPA Executive Secretary position is a part-time position," Connor explains, "During this fall my wife Catherine and I will be reorganizing the BES-Wicwas office to provide space for APHA activities.

Until other arrangements, Dr. Connor may be reached at P.O. Box 817, Cheshire, CT, 06410-0817. His phone, 24-hour answering machine and FAX number is 203-250-7575.

SAGE, THE BEAR

The Ladies Auxiliary of the American Beekeepers Federation introduces Sage. Named for the tastiest honey source from his home state of OK, it also comes from the wisdom he has absorbed from some of the best beekeeping books available. Hand made and crafted this 5-1/2" x 5-1/2" loveable bear and his books is available for only $9.95, plus $3.00 P&H from the ABF Auxiliary, Rt.3, Box 3, Melnor, ND, 58060. Proceeds benefit the American Honey Queen program.

Federation's 1991 Winner

4-HER'S BEST IS SURVEY

Exhaustive research provided the foundation for the top writer in the 1991 American Beekeeping Federation 4-H Beekeeping Essay contest, which had the theme *Honey Use in My Community*.

Jennifer Diane Bittel, a 13-year-old eighth grader from Dallas, OR, earns a $150 cash prize for her essay, which she titled *What Is Buzzing in Polk County*. She developed survey forms and gathered data on honey use in her community from eight beekeepers, two honey processors, 100 consumers, seven food manufacturers, 20 retail stores, 30 restaurants, eight institutional foodservice establishments, and nine schools.

Jennifer's survey data became the basis for her winning essay: 22% of consumers use honey weekly and 35% use one to two cups per month, she found, but 60% of the restaurants don't serve honey at all. Some of the cooks she interviewed shared honey recipes with her; with these she compiled a booklet to help "keep things buzzing in Polk County."

Jennifer has been in 4-H three years. She plays the piano (6 years) and the violin (5 years) and has two pet lambs – Clarence and Florence.

Placing second and winning a $100 cash prize is Ryan Daniel Smith, 11, of Wellington, NV. A sixth grader, he is a member of the Smith Valley Community 4-H Club. He is also involved in little league, piano, clarinet, and church school.

Ryan also surveyed a variety of honey users, including the Nugget Hotel and Casino in Reno-Sparks. He found it "operates eight different restaurants (and) ... uses about 90 pounds of honey per month. (Nugget Food and Beverage Director Al) Darby said honey is routinely offered with pancakes, waffles and french toast at the General Store and Farm House restaurants. It is available at all bars and is served mostly with hot drinks. The Nugget has its own bakery where they use honey in french walnut toast, bran muffins, glaze for doughnuts, coffee cakes, almond bars, cinnamon glaze, and lemon sauce. The Nugget also uses honey in its spinach salad dressing and with some of its chicken dishes. In addition to the one pouncd packets, the Nugget had 18 five-pound containers, and four five-gallon buckets of honey in stock."

Winning $50 for her third place essay is Marie Renner, 15, of Clearbrook, VA, where she will be an 11th-grader at James Wood High School. She is a member of the White Hall 4-H Club, runs cross-country and indoor and outdoor track and takes dancing lessons.

"The golden treasure of the honeycomb is a favored ingredient of the discerning cook", Marie wrote. "Most of the cooks I talked to feel it makes a recipe sweet and savory. They feel the benefits from using honey in cooking include baked goods staying fresher longer, a rich brown color, and a new flavor from an old dish. Because the taste of honey varies from the light and mild to the dark and strong, cooks describe honey as tricky to work with. Muffins, cookies, cakes, bread, pies, baked chicken, baked beans, barbecue sauce, salad dressings, and drinks are some of the recipes they use."

In addition to their cash awards, the three essayists will receive a book on beekeeping as will each of the state winners from the other 18 states which submitted essays.

"The quality of this year's essays made the work of the judges difficult", says ABF Secretary Troy Fore. "The top half-dozen scored very close together. Any one was worthy of a top prize.

"This essay topic took the students out into their community to talk to our customers, the users of honey. Next year's topic is designed to do the same on the subject of pollination."

The topic of the 1992 ABF 4-H Essay is "The Results of Honey Bee Pollination in My Community." The essayist is to first determine which foods benefit from honey bee pollination, then survey consumer and foodservice use and retail sale of these foods as well as farm use of bees for pollination.

Quebec's New Product

MEAD MOVES NORTH

Quebec beekeepers have come up with a new idea to produce an old product as a way to increase their returns.

They are producing mead and getting financial help from Agriculture Canada under its Agri-food Testing and Experimentation program.

"We want to increase the value of our honey crop," said producer Claude Desrochers. "Producing mead allows us to diversify. It also represents a personal challenge in that we are looking to master the art of winemaking."

Desrochers, his partner Marie-Claude Dupuis, and four other beekeepers decided to try mead production after attending a course conducted by wine expert Robert Demoy.

"Mead has a lot of potential as a specialty product," said Demoy, who now works as the project's technical adviser.

After tasting the results of the program's first production, Demoy said "the results to date are encouraging."

The beekeepers will also produce a mead with added fruit.

"The first vintage will be a dry rosé made from raspberries," Desrocher said. "After our initial evaluation, we believe that honey enhances the flavor of the fruit in these wines.

"These first vintages will allow us to test the market, evaluate the tastes of consumers and, if necessary, readjust our targets."

In the last two years of the project, the producers plan to try at least one other fruit-based mead, a champagne-type mead and a mead aperitif with a higher alcohol content.

The products will be sold at the farm gate, in line with Quebec provincial regulations governing the marketing of cottage wines and spirits.

But if producers can create and meet a large, steady demand, white mead or mead rosé could become available in the province's liquor stores.

For the moment, though, the producers are looking for quality, not quantity, and they are using white honey to achieve this even though it is harder to ferment.

"What we are striving for is excellence, not a large volume of production," Desrochers said.

A Royal Rip-Off?

ROYAL JELLY A JOKE?

A leading British nutritionist has caused a royal stir by backing a health magazine's claim that royal jelly is no better for the user than a bowl of cornflakes.

"There is not a shred of evidence that it does any good whatsoever," said Arnold Bender, former professor of nutrition at the University of London.

And the magazine *Which Way to Health?* said it found no scientific evidence to back up health claims.

It said while royal jelly contains all of the amino acids, 10 vitamins and six minerals they are only present in tiny amounts.

It said compared with a generous 500 milligram serving of royal jelly, a bowl of cornflakes provides 30 times more thiamine and riboflavin, 90 times more niacin and almost 400 times more folic acid.

"It's an expensive and not very good way of getting more vitamins and minerals," the magazine said. "Advertisements suggesting it can help treat medical conditions are misleading. Legally, royal jelly products are classified as foods and cannot make medical claims."

Britons spend 17 million pounds (about US$10 million) a year on royal jelly products.

Among its supporters is Peter Dean, a star of the British television series The East Enders. "It seems to work for me when I'm feeling a bit run down," Dean said. "I prefer royal jelly to a bowl of soggy cereal any day."

Ontario Has Trap Line

CANADA WATCHES BORDER

The Ontario Ministry of Agriculture is standing on guard at the U.S. border on the watch for invading varroa mites and Africanized bees.

The ministry has placed 540 swarm traps along its border with New York state to give the province's 5,000 beekeepers early warning of any incursion.

Last year, the 80 ministry inspectors checked 30,436 of the province's 105,000 hives for varroa and chalkbrood. There was no incidence of varroa in the 20,000 hives checked for the mite.

Varroa is a reportable disease under the federal Animal Diseases Protection Act and provincial inspectors are working closely with federal veterinarians in the continuing survey for the pest.

But provincial apiarist Douglas McRory said the province still feels not enough surveying is being carried out.

"We will be negotiating with Agriculture Canada for more," McRory said. "The feeling is that we would like to see every hive within 10 miles of the border surveyed – just as we do now for honey bee tracheal mites – and two percent of the hives in the rest of the province."

The tracheal mite surveys in the fall of 1989 and spring of 1990 resulted in the depopulation of 1,475 hives in 46 bee yards. The fall, 1990, survey saw another 465 hives in 15 bee yards depopulated.

McRory said inspectors are mainly finding HTM close to the U.S. border.

"We have been finding the infestations at really low numbers in the hive – often one or two bees with mites in them," he said. "It is also apparent from our sampling across the province that HTM is not present in measurable amounts elsewhere in the province.

Bee Art

GALLERY HAS "BRIDGE OF BEES" SHOWING

The Amos Eno Gallery will present the first New York solo show of Boston Artist, Mary Spencer. *The Bridge of Bees* is a show of recent monotypes and will be view from September 7 - 26. The Amos Eno Gallery is on the fourth floor at 594 Broadway.

Spencer's monotypes revolve around the central image of a beekeeper asleep by his hive while the bees make unprecedented night flights. These pieces reflect the symbolic ramifications of the hive, honey, Queen bee, and beekeeper with suggestions of sleep and wakefulness, cloister and field, and masculine and feminine energies.

Combs in a hive are built by chains of bees linked leg to leg; this iconographic figure of cooperation is known to beekeepers as T*he Bridge of Bees*. Spencer's work suggests both communal sanctuary and the most stringent discipline, even sacrifice. The narrative elements allude to ancient myths of Blue Bee Vishnu and the Semi-sacred bee attendants of Isis, Cybele, and Diana.

Mary Spencer has received the Massachusetts Artists' Fellowship in Drawing, the Blanche E. Coleman Award, and Fellowships to Yaddo, the Millay Colony for the Arts, and the Virginia Center for the Creative Arts. Her work has been shown throughout New England, New York, and the Midwest.

For more information contact Daniel B. Ferris, Director, 594 Broadway, #404, New York, NY 10012, (212) 226-5342.

LANDS' END®
DIRECT MERCHANTS

Lands' End, Inc., the national mail order clothing retailer battling a growing boycott by fur trade, farm, and sportsmen groups, now finds itself in a painful financial pinch.

The company's 1990 net profit plummeted almost 50 percent from 1989 and its stock has dropped 20 percent from its annual high, since the boycott by animal user groups began last summer. Fur trade, farm, and sportsmen groups launched the boycott because Lands' End refused to retract statements that it would sell no fur or leather not "obtained through the natural food chain" due to "environmental and humane concerns."

Lands' End stock traded up to $35 per share in 1989, but the stock has retreated to around $19 per share since the boycott started. In the fourth quarter of 1990, according to the Wall Street Journal, Lands' End earnings fell more than nine percent over 1989.

Lands' End's sluggish performance has not gone unnoticed by market analysts. The March report of Value Line, an investor service, declared that Lands' End stock "is not timely," a clear signal to investors to hold off stock purchases.

USDA INVENTS TEMPER METER

A "temper meter" for honey bees may help protect against the very aggressive Africanized bees that are moving into Texas from Mexico.

"If we can spot bees that have Type A personalities, we will have a better chance to control Africanized bees before they invade our calmer domestic bee colonies," says Hayward G. Spangler with the U.S. Department of Agriculture.

Spangler invented an electronic device – the stingometer – to record how many stings disturbed bees make, an indication of their demeanor.

He has recorded up to 24 stings **per second** from Africanized bees in tests in Costa Rica. That compares to a maximum of about four stings per second recorded from domestic bees near his lab in Tucson, AZ.

He put an electronic sensor inside a small plastic bottle that's a target for stinging bees. Hung in front of a hive entrance, the device records bee stings for 10 seconds after the bees are provoked by blowing air in the hive.

Spangler and fellow entomologist Eric H. Erickson at the Carl Hayden Bee Research Center have received a patent for the device. They hope private industry will develop it into a reasonably priced commercial product so beekeepers can destroy overly defensive hives or take out the old, mean queen and put in a new gentle one that will produce friendlier offspring.

Bill Murphy

Bill Murphy's 95th birthday celebration was extra special. The Allegheny Mountain Beekeepers Association presented him a plaque for lifetime achievement in apiculture.

The group also presented the book *ABC & XYZ of Beekeeping* to the LaVale Library in his honor.

Mr. Murphy was born March 18, 1896, in Parsons, WV, but moved to Maryland as a small child. His parents, Charles Arthur and Corlista (Groghan) Murphy, settled on the North Slope Farm in eastern Garrett County.

As a young boy he attended the Beall School during the winter season only. He worked on the family farm helping to plant and harvest crops and also worked on neighboring farms.

His first experience with honey bees occurred while he watched turkey hens to keep the foxes away from his homeplace. He was barefoot and got stung while walking in the meadow. His father cut an oak tree when Bill was 10 years old and he got his first taste of wild honey.

In 1924 he married Cora Virginia Rinker, of Moorefield, WV. They settled on a farm and orchard five miles west of Frostburg in Garrett County. Mr. Murphy began beekeeping in 1941.

Leaving the farm in 1951 he maintained his interest in honey production even after retirement 10 years later. His hobby lasted 46 years when he sold or gave away his hives and equipment.

Kristine Stowell, 18, is Miss Michigan Honey Queen, crowned in March, 1991. She will promote honey and beekeeping throughout the state during the year and will compete in the National competition in San Diego, CA in January.

VIDEO MAKES DEBUT

A new video showing the versatility and ease of cooking with honey is now available from the National Honey Board. The *Just Add Honey* videotape can be used for such events as state fairs, presentations and cooking demonstrations.

Just Add Honey is a lively and entertaining 23-minute segment with the look of a network talk show. A number of great recipe ideas are presented by witty and attractive hosts. Consumers won't walk away from this video without absorbing a few good hints on using honey.

Order your copy of the *Just Add Honey* videotape today by sending $12 to the National Honey Board, 421 21st Avenue, Suite 203, Longmont, CO 80501-1421.

USDA AMENDS HONEY ACT

The U.S. Dept. of Ag. has amended the Honey Research, Promotion and Consumer Information Order to conform with legislation in the 1990 Farm Bill.

Daniel D. Haley, administrator of USDA's Agricutural Marketing Service, said the amendments to the order will:

– provide for exporter representation on the National Honey Board;

– allow existing board members to fulfill their respective terms of office should a realignment of regional production or representation occur;

– allow exemption from paying board assessments only to those who produce, handle or import less than 6,000 pounds of honey, or who donate their honey to charity;

– provide that patents, copyrights, inventions, product formulations or publications developed by the board be the property of the board, and that funds generated from them would benefit the board;

– require USDA's Agricultural Stabilization and Conservation Service to provide documentation to producers at the time it deducts assessments for the board on honey placed under the fed. Honey Price Support Loan Program;

– provide that persons receiving an exemption from paying assessments must maintain certain records; and

– place responsibility for paying assessments directly on the producer whose assessment has not been collected by a first handler (buyer) or ASCS.

These amendments were published in the Aug. 7 Federal Register, pg. 37453 and were effective immediately.

FOOD PRICES UP, BUT FARM INCOME DOWN – NOTHING NEW!

U.S. Retail Food Prices in 1991 should average only about three percent higher than last year. Allan Lines, agricultural economist at Ohio State University, says lower prices for poultry, eggs, dairy products and vegetables will moderate small increases in beef and pork prices, and somewhat larger increases in fresh fruit prices. Overall, food prices will probably increase less than most goods and services. Since 1960, food prices have equaled or exceeded the average inflation rate 19 times. And since 1986, food prices have risen more rapidly than the general rate of inflation. Lines says this suggests that food has become a major source of inflation in the general economy. Food expenditures are the third largest component of the consumer price index at 16.3 percent, behind housing at 42 percent and transportation at 17.1 percent.

1991 Farm Income is expected to drop as much as 15 percent from last year's strong showing of $47 billion net farm income and $58 billion net cash farm income, according to Lines. Contributing to the decline are an additional $2 billion in expenses, $3 billion less exports, lower government payments and $8 billion less in cash farm receipts. Highly leveraged farms will be hurt most by lower earnings, which will cut farmers' capacity to service debt and reduce the amount of income left for family living and capital replacement. It will be difficult to maintain asset values, especially land prices. Lines advises farmers and beekeepers, to keep reducing debt and be cautious about taking new loans.

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THE AUSTRALASIAN BEEKEEPER. Published monthly by Pender Beekeeping Supplies Pty. Ltd. Send request to: The Australasian Beekeeper, PMB 19, Maitland NSW 2320, Australia. Subscription $US 27.00 per annum, Surface Mail (in advance). Payment by Bank Draft. Sample copy free on request.

RARE BREEDS JOURNAL. Bi-monthly journal about exotic, minor and rare breeds of domesticated animals and their owners. $18.00 (U.S.)/year, $24.00 Foreign; $2.50 for sample copy. Rare Breeds Journal, Dept. Bee, HCR 1, Box 45, Hebron, ND 58638 (701) 878-4970.

CANADIAN BEEKEEPING. The news media of the Canadian Honey Industry. Send $15.00 for one year subscription to: CANADIAN BEEKEEPING, Box 128, Orono, Ontario, Canada LOB 1MO.

CORNUCOPIA. Quarterly newsletter for developmental beekeepers. Articles on low technology beekeeping, honey trees for agroforestry and marketing bee products. Rates $10/year to IAAD, D. Sammataro editor, 7011 Spieth Rd., Medina, OH 44256. (216) 722-2021.

BRITISH BEE JOURNAL. Monthly, single copies 33p plus postage. $15.00/yr. U.S. Annual subscription post paid. Sub-agent: The A. I. Root. Co., P. O. Box 706, Medina, OH 44258, U.S.A.

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THE NEW ZEALAND BEEKEEPER. Quarterly magazine by the National Beekeeper's Association of New Zealand. Write for rates and indicate whether airmail or surface mail. N Z BEEKEEPER, P. O. Box 4048, Wellington, New Zealand.

THE ANGORA QUARTERLY. A useful publication on the rearing and marketing of Angora Goats and Rabbits. $16 - 1 year, $20 foreign (surface); $5 sample. The Angora Quarterly, P. O. Box 322, Interlochen, MI 49643.

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ability to learn and to make rational choices about matters that affect their welfare."

I could tell from the look on his face that Uncle Lester wasn't buying any of this. In fact, he seemed to be of the opinion that I was putting him on.

"Give me one good example that proves a bee can think," Uncle Lester suddenly demanded. He obviously thought that now he had me in a corner.

"Okay," I answered. "Here's your example. If a worker bee has her choice of two different nectar sources, she will – other things being equal – choose the source whose nectar has the higher percentage of sugars."

"Huh?" Uncle Lester said. "Run that by me again. I don't know what you're talking about."

"To put it another way, bees are smart enough to know how sweet a given nectar is in comparison to another nectar. And smart enough to choose the nectar that gives them the best return for their time and effort."

"I still don't know what in the world you're talking about," Uncle Lester said peevishly.

"Never mind," I suggested. It's all rather abstruse, unless you happen to be a beekeeper."

"Ab-what?"

"Look," I said. "You ought to know more about bees than most people do. You're always asking me questions about them. And you've actually seen the innards of a real hive. Don't you remember that time you put on a bee suit and veil and gloves and went with me out to my hives?"

"Sure I remember," Uncle Lester answered. "How could I forget. All those bees buzzing around everywhere."

"Well, you told me you wanted to see what a beekeeper really does. So I showed you how to smoke the bees and open a hive. And I even found the queen and pointed her out to you. And you didn't even get stung, did you?"

"No, but I was probably just lucky."

"The point is," I said, "you should have learned something positive about bees from that experience. You should have been able to see for yourself that bees are marvelous little creatures and fun to work with."

"I still don't see why anybody would want to mess around with bees," Uncle Lester insisted.

"Didn't you see anything that day that excited your sense of wonder?" I asked in exasperation.

"No," Uncle Lester answered. "I didn't. But then most of the time I had my eyes closed." □

Display Index

Convincing Uncle Lester

Richard Dalby

"You still messin' with bees?" my Uncle Lester asked me the last time we were together.

"More or less," I answered, trying not to sound too definite. Uncle Lester hates definite statements, unless he happens to be the one making them. Make a definite statement and Uncle Lester is sure to challenge it.

"Whaddya mean, more or less?" he went on. "Are you or ain't you?" Uncle Lester likes to challenge indefinite statements, too.

"Yes, I still have bees," I said, knowing full well that now Uncle Lester was certain to attack. He likes to charge your verbal positions, Uncle Lester does. No flanking maneuvers for him. He comes at you straight on.

"Whaddya want to mess around with bees for, anyway? Seems like a dumb thing for a person to do, if you ask me."

I, of course, hadn't asked him. Had no intention of asking him. But it takes more than that to deter Uncle Lester.

"So tell me," he pressed on, "what's so great about foolin' around with bees?"

"Well," I answered, "for one thing, I happen to like bees. They're a lot of fun to work with." I was going to say more, but Uncle Lester came right back at me.

"Fun to work with, eh? How the H-E-double toothpicks can it be any fun to work with something that can sting the bejabers out of ya?"

"I guess it wouldn't be, for most people," I answered. "But some of us find bees extremely fascinating."

"What's so fascinating about 'em?" Uncle Lester demanded. I thought of retreating, then and there, because there's no winning an argument with my Uncle Lester. Like some people, he likes to argue just for the sake of argument. But I felt called upon to defend my avocation. Besides, sometimes I like to argue, too. Just for the sport of it. So I mounted a charge right back at good old Uncle Lester.

"Everything about the honey bee is fascinating," I said, with a conviction that surprised even me. "There's no creature anywhere more fascinating than the bee. Just ask any beekeeper."

"I can't see anything very fascinating about gettin' stung," Uncle Lester said, in a bit of a huff.

"A sting now and then is just part of being a beekeeper," I continued, trying to sound philosophical. Uncle Lester doesn't like philosophers.

"Sounds dumb to me," he retorted. "Who likes to get stung?"

"Nobody, I suppose," I went on. "But it's part of the game from time to time, Besides, bees do a lot more than just sting, you know. They pollinate all sorts of plants and they make honey. You know what honey is, don't you? That sweet, sticky stuff they sell at the supermarket?" I have to admit that I'm not above needling my Uncle Lester once in a while.

"Course I know what honey is," he replied. "What damn fool doesn't?"

"I was just wondering," said I, enjoying Uncle Lester's discombobulation more than perhaps I should have.

"What good's honey, anyway?" he asked with a hint of truculence. "It's no better than sugar. And besides, sugar's cheaper."

"Honey is a lot better than sugar," I countered. "Just ask the experts."

"What do all those so-called experts know?" Uncle Lester shot back. "Most of those experts don't know diddly squat, if you ask me. They just like to think they do."

"Well," I said, "some experts are of the opinion that bee stings are good for arthritis." Uncle Lester has a touch of arthritis, so I calculated that this statement would get his attention.

"Bee stings are good for arthritis? Why that's the dumbest idea I ever heard of. How could a bee sting help someone's arthritis?"

"I don't know how it works," I said. "Nobody knows for sure." "But it does seem to work. At least for some people. There are lots of articles about bee venom therapy in the bee journals."

"If that ain't the limit," Uncle Lester said, shaking his head. "Pretty soon you'll be telling me that bees can think."

"As a matter of fact," I said, "they can." Uncle Lester looked at me with pure disbelief. "It's the truth," I went on. "I'm not saying bees think in the same way human beings think, because they don't. But they do seem to have the

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BOTTOM·BOARD