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COVER STORY

The honey harvest season is in full swing as commercial, part time commercial and hobby beekeepers bring the golden harvest into the extracting rooms by truck, trailer or any means suitable for the volume being handled. Photo by James Steed of Richmond, KY. The picture was taken at Stoller Honey Farms of Latty, Ohio.

Gleanings In Bee Culture

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109 Years Continuous Publication by the Same Organization

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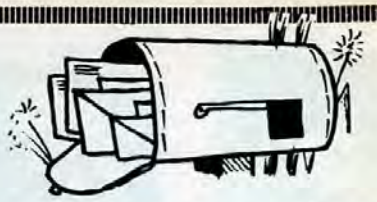
Gleanings Mail Box



African Adventure

Dear Editor:

My husband has been a subscriber of your magazine for 20, 30 or 40 years. This little story took place about 30 years years ago when I was out on my horse riding across the open plains of the South Kinangap, Kenya, Africa, where no trees grow, only small, scrub bushes. On one of these was a big swarm of bees, a really nice, large swarm which I felt I must take back to my husband. I got off my horse and cut the branch holding the bees with penknife. How to remount a restless mare who did not like bees? After about ten minutes I decided to lead her to a ditch near the road and by holding the swarm out of sight behind her I was able to remount. The fifteen mile ride home was uneventful except that the swarm was heavy and I could not hold it out at arm's lengeth. The arm began to droop and as it did so the bees slowly crawled up the branch and up my arm until the great, hot swarm was hanging from my armpit to my elbow. When I reached home I could not get off my horse. I called my husband who came out with a basket skep which he held below my arm and gave me a violent shake. The bees fell off into the basket and my aching arm was released. The bees went into a hive satisfactorily and this was a strong hive for many years.

We still keep bees here in Kenya and have had other quite amusing experiences. My husband started keeping bees in 1917 and now at 72 years (he started at the age of 7 with an old African beekeeper) he still has a number of hives.

Barbie Nightingale
Sasumua Estates
P.O. Box 23
Njoro, Kenja, East Africa

Letter From Poland

Dear Editor:

I'm a night school student and became interested in bees when my teacher started telling about beekeeping in class. In 1945 a beekeeper with a vision, who was also a high school teacher, founded a unique school in Poland, a night school which specializes in training beekeepers. Today, this school which is near Lublin, southeast of Warsaw, has large, well equipped classrooms capable of holding 25 to 35 students. The school owns and operates over 400 colonies of bees.

I wish to correspond with American beekeepers. After graduating from school I want to enter the university and afterwards work in the United States with bees.

Bajan Lech
Polska
23-210 Krasnik
ulica Cicha 25

Bees And Neighbors

Dear Editor:

If I were Mr. D. Terry Kinch, Campbell River, B.C., Canada who has a neighbor complaining about bees that bother them, I would pay a visit with the neighbor with a five pound can of honey and a pamphlet on bees or pollination. Sit with the neighbor for a while, discuss bees, pollination, benefits of honey and ask to be shown the insects that cause the trouble.

The insects may not be honeybees but some other type of bee-like insects which confuse the average lay person not infected with bee-itis.

Wasps and hornets like to investigate picnic areas and it is possible that a little picking up of attractive material to the wasp or hornet will alleviate some of the complaint.

Bees do not present a constant problem unless the neighbor has a honeybee swarm located near the residence. Watching the flight path or sprinkle flour on the bees will offer some indication where the colony is located. Dr. Karl von Frisch marked bees coming to a feeding dish and then observed which hive they entered.

My bees are located within 300 feet of trailer homes and my land owner explained the benefits of the bees and promised greater fruit crops, vegatable crops and more melons and squash to the mobile home owners. There are over 100 mobile homes in the area and no complaints. We also have water available for the bees so they do not have to travel to near by ditches and puddles for a drink.

I would continue weekly visits and deliver a new bee pamphlet each time. The A. I. Root Co. has excellent pamphlets for this purpose and keep the neighbors supplied with small samples of honey. It's an education process which may require small gifts of honey to all the mobile home owners because sweet news spreads fast.

Maybe there is some thing in the home brew that need sampling.

Albert G. Bell — President
Eastern Montana Beekeepers Association
Billings, Montana

Flower Pot Hives

Dear Editor:

I have been involved in promoting beekeeping in the Philippines for the last two years. With the help of my sister-in-law, Imelda Acosta, in Manila, I promote beekeeping by distributing beeswax comb foundation and proper beekeeping information for local hive bees (Apis cerana).

I read with interest in the July issue of *Gleanings*, the observations of Dr. Roger A. Morse regarding comb attachment in top bar hives. While this type of beekeeping may not make much sense to western beekeepers, it does have possibilities in the tropics where keeping the cost of a beehive low is important, and where wax moths are a greater problem. Strange as it may seem, bees are sometimes kept in large flower pots. The beekeeper is able to lift all of the combs from the flower pot. This demonstrates the principle that bee will seldom attach combs to a sloping side. A top bar hive in a flower pot is possible by waxing in small starter strips of foundation into grooved top bars. Since these bees have smaller colonies, a foot high flower pot is large enough. I have seen hundreds of colonies of bees kept in flower pots in the Philippines.

Wayne Stafford
2015 Lower Huntington Rd.
Fort Wayne, IN 46819

(Continued on page 527)

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Projects A Small-Scale Operator Might Attempt (That a Commerical Operator Might Shun)

By GRANT D. MORSE, Ph.D.
Saugerties, NY

A HOBBY BEEKEEPER can enjoy trying many ventures that a commercial operator can not afford to undertake. For example, the experts advise beekeepers not to try to winter weak colonies.

Many of you and I know that if one has the time, and certain favorable conditions are present, a colony that is weak in the fall can often be wintered over successfully and profitably.

Of course, the weak colony that is being considered for wintering over should not be one with a failing queen. But if it has 3-4 frames of young bees and a lively young laying queen, the provision of three or four frames of honey can make it a likely success. It should be placed over a strong colony with a double screen over the hole in the inner cover which is placed between them, and which serves during the winter as a bottom board for the weak colony.

Some appropriate type of entrance needs to be provided for the weak colony such as a slot in the rim of the inner cover. There is little advantage, if any, in placing the entrance of the weak colony at the back. It is desirable, if convenient, that the weak colony by transferred into position early enough in the fall so that its flying workers may establish the necessary new flight patterns.

Some type of upward ventilation for the weak colony should be provided; but the exit hole, wherever it is placed, should be small, in keeping with the small size of the unit. If the unit, together with the strong colony below can be provided with packing, so much the better. Such a weak colony will winter in royal fashion and build up rapidly in the spring, particularly if it has adequate stores. My personal experience in wintering weak colonies in this manner has been extremely satisfactory.

It is desirable that the upper exit provided for ventilation be so constructed that the bees may use it if the lower exit becomes clogged during the winter. Often the bees prefer an upper exit. I once had an interesting experience with the use of upper exits that doubly confirmed my belief in their value. It happened this way: There was a three-hive-body colony in my Catskill Mountain yard that was located at approximately 2,000 feet elevation, which evidently clogged its lower exit at some time during the winter. Apparently, its upper exit through the paper with which it was wrapped also became blocked.

When I first visited it on the first of May, following the winter, I found the bees exiting through a small torn portion of the black paper wrapper at the base of the pack (near the bottom board). In order to effect exit from the pack the bees had to travel from the slot in the inner cover, down the sides of the three-hive-bodies, and out the accidently created hole. They were in excellent condition. The adjacent colony with normal packing did not survive the winter.

Securing Queens

The typical beginner is not likely to want to venture raising his or her own queens. But if the beginner has a fairly large number of colonies and wants to dabble in queen raising, why not?

For those who are skillful enough, or venturesome enough, the traditional grafting procedure may be all right. But for the less experienced person there is a well known method that is perfectly acceptable. No matter what method is tried, the operator should assure himself that his end product is a superior one else the whole effort will be extremely negative in its results.

First, select a colony to breed from that exhibits all the characteristics that you want in your colonies, such as heavy production, gentleness, and good wintering abilities. Insert into the midst of the brood of such a colony a light colored comb. If desired, the lower couple of inches of the comb may be cut away with a sharp knife. This will encourage the building of cells along this edge.

After about three days, check the frame to see if it contains newly laid eggs. If so, place this frame in a strong colony that you have made queenless a few days previously, and from which you have removed any queen cells that have been started.

About nine days after inserting the frame of light colored comb into the queen rearing colony, remove it and cut out carefully the best looking capped queen cells. These may be inserted singly into nuclei that you have prepared for the purpose, or introduced into any queenless colony that you may desire to requeen.

Obviously, queen cells should be handled carefully, never should be shaken or dropped, and should be attached deftly in the brood nest of the queenless units to which they are introduced.

If you are concerned with the dollars and cents element in the operation, you must take into consideration whether the queens you secure are of great enough value to compensate for any possible lack of crop production in the colonies used in the process. But there is more to

the experience than dollars. There is the satisfaction of performing an operation that can yield excellent results.

If a small scale operator follows this practice of producing his own queens, he may wish, every few years, to use as a breeding colony one exchanged with a neighbor who has a desirable strain of bees, or one from a second yard of his own. This practice will help to prevent undesirable inbreeding.

Hive Supports or Stands

Every commercial operator must decide whether he wishes to provide wooden supports for his colonies. Many such operators feel that they can scarcely afford not to provide such supports. No small scale operator, probably, should fail to provide them.

Their use gives the bottom board of a colony a secure, elevated support that helps prevent rotting of bottom boards, provides protection from dampness and the intrusion of wind beneath the hive in winter, elevates the bottom board enough so that grass and other vegetation tends not to block the flight entrance, and makes stooping over by the operator less stressful.

Such stands are commonly built to support two colonies which may be shoved close together in the late fall for mutual warmth and protection, and for ease in packing (if it used) during the winter months. They are usually made long enough to permit separating the two units during the warm months.

Since it is usually desirable for all hives to tip forward slightly (to encourage drainage), it is suggested that the back support of the stand be a fraction of an inch wider to assure this feature.

Such hive stands should be six or more inches high, 48 inches long, and 20 inches wide. The two cross members shold be built 32 inches apart center to center to assure a dead air space for wintering purposes. The stands may have their life lengthened by being treated with a wood preservative such as creosote, pentachlorophenol, or some other.

Packing for Winter

Some commercial operators believe that they cannot afford to pack their colonies. It is my belief that in the colder zones of this country and in Canada, the small scale operator cannot afford to expose his colonies to the winter cold and winds without packing.

The word packing may not be the most appropriate term to describe the current method of wrapping two or four hives together with a black very light weight building paper — one sufficiently heavy to shed water, but light enough to encourage a slight breathing or passage of air through it. Only single layers of paper should be used. A section of paper nine feet, four inches long is sufficient to wrap two colonies together.

The paper is secured to the hive bodies at the bottom by nailing it securely with light weight strips of scrap wood or lath. Lath strips that have had conservative-sized entrances dadoed in with a power saw make superior entrance blocks — much better than the usual cleat. They prevent entrance by mice, and serve to hold the paper on the hive fronts by being nailed at each end with a thin nail thus discouraging removal by skunks or other rodents. Some operators now use staples to fasten the paper to the walls of the hive but strips of wood make for greater security.

Packing consisting of crumpled newspaper, straw, or hay, should be placed at the top of the hive (with a mouse deterrent mixed in) to act as a support or as rafters for the strip of paper that serves during the winter as a roof to shed snow and rain. No extra packing is needed at the sides.

One advantage of wrapping colonies for winter is that it helps the operator to provide upward ventilation without undue exposure of the cluster to excessive circulation of air.

An operator should never depend upon the packing at the top of the hive to absorb satisfactorily the moisture that will rise from the cluster. Instead, some avenue of escape at or near the top of the hive for moisture should be provided (through a crack between the upper hive body rim and the inner cover, for example). In addition, escape for moisture from that vent must be made through the wrapping paper. To fail to provide this last avenue of escape for moisture is to nullify all the benefits of packing or wrapping.

The whole wrap is finally held in place by being tied with heavy twine to nails driven into the hive support.

Wrapping with black paper not only protects the colony from extreme cold and wind (particularly the latter), but it readily absorbs the heat from the sun on warmer days and thus encourages the cluster to move to stores which might not otherwise be available over extended cold periods. Also, it stimulates the workers to leave the hive to defecate.

There are years in the colder areas of this country and Canada when bees may not need packing. But one never knows when a severe winter may come along that wipes out large percentages of even the strongest colonies if they are not thus protected.

Wind is probably the greatest foe of success in wintering. The temperature maintined by a cluster of bees at its surface is slightly higher than that of the surrounding air. When wind is permitted to reach the cluster's surface, additonal effort must be exerted by the bees to maintain both its surface temperature, and the temperature within the cluster.

(Continued on page 521)

University of Guelph Offers Bee Material

The following beekeeping-related educational material is available from the University of Guelph, Guelph, Ontario, Canada.

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A catalog listing the descriptions of the above along with information for ordering can be obtained by writing: Office for Educational Practice, University of Guelph, Guelph, Ontario N1G 2W1 Canada.

Siftings

By CHARLES MRAZ
Box 127
Middlebury, VT 05753

RECENTLY, A READER of *Gleanings* wrote me about the agricultural chemical industry buying up seed companies, and a large popular "organic" gardening publication. I have heard, has been bought up by a large food processing firm. To control the production and distribution of seeds would certainly be a minopoly of the worst kind, should this come to be and for man to fight Mother Nature is to commit suicide.

Page 372, July *Gleanings*, Ancel Goolsbey writes of an experiment on "Are we Raising a Lot of Welfare Bees?" This experiment was based on two hives, one limited to one brood chamber with an excluder and the other hive with an unlimited brood nest with no excluder. It is dangerous to make any conclusions on such a small scale. At least ten hives, or better yet one hundred hives should be used to make such a test over a period of at least ten years. In beekeeping, one soon learns no two hives are ever alike and no two seasons are ever the same.

Page 400 July *Gleanings*, Gary Friedman of Texas has an article on the same subject, "Single or Double Brood Chambers?" Again trying to prove bees in one brood nest will produce more surplus honey than queens in two brood boxes. What both of these writers seem to object to, is that bees will put a lot of the honey they produce into a large brood nest, instead of into the supers above the excluder. Therefore, the honey stored in the brood nest is "lost."

Sixty years ago, and for many years, we wintered entirely in one brood nest over winter. Then we started using a shallow super for a food chamber. Now, we use an "unlimited" brood nest. We never use excluders. With us, WE WANT TO HAVE THE BEES FILL THE BROOD NEST WITH HONEY. Honey stored in the brood nest instead of the supers, is not lost, it is better than money in the bank. You will get all that honey back next year with interest.

If you take away all the honey the bees produce by forcing them to store it in the supers that you will take away, then the bees have nothing for winter feed. Here, every hive needs a minimum of fifty pounds of honey, as they have to go for eight months with no honey available in the field. If you steal that fifty pounds of honey from the bees that is rightfully theirs, then you must pay it back in fifty pounds of sugar syrup, or more. Fifty pounds of honey for winter and spring feed goes much further and produces much stronger colonies of bees than sugar syrup. Again, don't try to fool Mother Nature.

Having been interested in bee venom for some fifty years, I recently had the privilege of spending a day with Dr. Mary H. Loveless to watch her desensitize a person allergic to bee stings. I have known Dr. Loveless for many years, back when she was the head of the Allergy Clinic, Cornell School of Medicine in New York Hospital, in New York City.

Some thrity years ago, Dr. Loveless pioneered the use of pure venom allergins for the treatment of persons hypersensitive to insect stings, rather than the whole body extract that had been used for some fifty years. Recently, the whole body extract proved to be just about worthless, and the pure venom has recently been accepted by FDA for treating hypersensitivity. As one allergist expressed it, "After thrity years, we are finally catching up with Dr. Loveless."

Not quite. The accepted method today by most allergists is to give increasing doses of pure venom solution once a week or so until desensitized over a period of several months. Dr. Loveless desensitized this allergic patient in just one day!

Starting about 8 a.m., the patient was given increasing doses of pure bee venom solution about every twenty minutes. By 2 p.m. he had taken about nineteen injections. Then at 4 p.m. the patient was given a live bee sting for just a couple of second; then each ½ hour or so. The sting from five bees was left in longer each time. The last or fifth sting was left for over one and one half minutes. This just about gives all the venom there is in the sting. There were no allergic reactions.

Needless to say, this is not an easy program. Constant check must be made of pulse and blood pressure to guard against any early symptoms of allergic reactions. It takes years of experience, to get the "feel" of the persons reaction to the venom. It was a hard, concentrated job, from 8 a.m. to about 6 p.m. to give the treatment and take all the detailed records of the wheals and reactions produced during the treatment.

This one day treatement does have many advantages over the long term method in the saving of time and almost "instant" desensitization. This person already has taken a sting a week later with no reaction. A sting every week should maintain an excellent level of resistance.

It will be sometime before this one day method is adapted, if ever. It is not an easy treatment to administer or to learn. Dr. Loveless is now over eighty years old, but she has more energy and is more alert than one half her age. The eight hours of constant concentration she uses to treat her patients takes a tremendous amount of effort, but she seemed to come through the day less tired than I was just watching her. Perhaps we should brag a bit and give the bees credit for keeping Dr. Loveless so young and active.

She even goes out into the countryside and catches her own wasps and bees to collect her own venom she uses for treatment. Almost everyone can be desenitized in this way. It is, of course, expensive, but certainly a lot better than to live in fear of dying from a sting. We hope someday someone will come along and carry on Dr. Loveless's work. I do not believe there is anyone, anywhere in the world, that uses a similar program for desensitizing an allergic person in one day as Dr. Loveless. If more doctors would work with it, it could lead to better methods of treatment, perhaps, with other many forms of allergic reactions, even more dangerous than insect stings, such as drugs. Someday, I hope, Dr. Loveless will get the recognition she deserves as a pioneer in the field of allergy.

Smokers and Their Use

By P. F. THURBER
Kirkland, WA

A REFERENCE I have makes mention of bellows smokers prior to 1875 and in that year Quinby improved the smoker by placing the bellows at the side of it. Following that, Bingham, in 1877, provided a gap between the fuel and the nozzle which enabled the smoker to smolder when not in use. With A. I. Root's enthusiastic writing about, manufacturing and use of the new smokers their use really took off.

In those days, before geneticists and bee breeders took much of the aggressive behavior out of bees, the smoker was pretty much a must. However, even after the invention and perfection of the smoker, many still used the closed lid sprinkler pot advocated by Langstroth in the 1850's. What Langstroth did was fill his sprinkler pot with light sugar syrup and sprinkle the landing platform a little to get the guards lapping up syrup instead of flying out to the defend the hive. Additional syrup was sprinkled on the top bars after the lid was removed, etc. I think you will find reference to this technique in the now available reprint of Langstroth's 1853 edition from the A. I. Root Company.

If you have never used sprinkled syrup to work a bad tempered hive I suggest you do. Of course closed top sprinkler pots are unavailable but Fantastik®, a cleaner used in the house, comes in a suitable plastic container with a squeeze pump that can be set for a misty spray. Carefully clean out all residues of Fantastik® before you fill it with light syrup (two parts water, 1 part sugar).

If afterwards you think you like smokers let me throw out some thoughts about their use and common misuse.

Obviously smokers should be lit and stay lit, yet many people have problems doing something just that simple. I start with an empty smoker, a piece of newspaper about twelve inches square and a piece of burlap the same size. I crumple the newspaper, light it and drop it in the smoker and follow it with the burlap which I also crumple, not fold, while pumping the bellows. As the flame starts well on the burlap I push the burlap down into the smoker but not so far as to snuff out the flaming paper. Then I add hunks of rotted stump as I continue pumping the bellows until great clouds of smoke appear. I then ram more wood into the smoker until I can hardly close the lid. Now I have lots of smoke available and it is cool smoke. Furthermore, well started like that, the smoker will smolder for problably an hour and smoke is available when and if it is needed.

Now the point may be raised that burlap is getting very hard to get and I agree. In that event I take a piece of the stump about the size of a golf ball and sprinkle it with charcoal lighter fluid and light that before I drop it into the smoker. Then proceed with more small pieces of stump until you have a jam packed smoker and good combustion. Now, before I go on I should warn you just any burlap is not to be used. Be sure you get old food sacks and not burlap that has been wrapped around imported carpets or rugs. You see, much of the carpet wrapping burlap has been treated with insecticides so moths don't gnaw on the carpets. In this same area I caution you not to use old oily rags. The vaporized oil in the smoke can and apparently does plug the breathing spiracles and tubeles through which bees breathe. If they cannot breathe they will die. In addition, a recent edition of a beginners bee book says that you can put ammonium nitrate ferilizer in your smoker and the smoke given off by the fertilizer gives off nitrous oxide which will put the bees to sleep if used carefully. Well, I have news for you! In addition to giving off nitrous oxide the burning fertilizer gives off some HCN or hydrogen cyanide gas, a deadly poison, which I suppose you know is used in gas chambers to execute criminals. Used in a smoker the gas can be a serious hazard to your health and at a minimum it severly shortens the life of your bees, if in fact it does not kill them.

The matter of actually using a smoker on a hive should not have to be discussed, you would think, yet it is obvious that many people don't know how. If you are a commercial beekeeper you probably smoke all the colonies but hobbyists should know which colonies are docile and friendly and don't need smoke and which colonies do need smoking, if only to protect the neighbors. Some people mark those that do need smoke to separate those from ones that don't need smoking. Smoking a colony adversely affects honey production, I am told by scientists, for at least 24 hours, maybe more. Futhermore, smoking demoralizes the bees' guarding behavior, it being diminished, therefore making it more susceptible to being robbed.

When you do have to smoke a hive, work the others first. Then go back and give each **ONE** puff of smoke and start on those which need smoke. I usually give each one that needs smoke two or three puffs of smoke in the lower entrance and then go back to the first one and sit on the hive until I am sure the smoke has had at least two minutes to work. Then one more puff of smoke in the entrance and the crack and tilt up the lid. Then one puff across the top bars and close the lid. Go sit somewhere another minute and then go to work. Since the effect of smoke increases for over five minutes the wait for at least three minutes from the initial smoking pays off in easier to handle bees.

As a former state apiary inspector I must agree that once in a very long time you will find a colony that just gets completely unmanageable no matter how carefully it is smoked. In that case I guess all you can do is put the top and bottom screens on it and move it out in the country where bad tempered bees cannot bother anyone. Then in a day or two put lots of clothes under your coveralls and go work it. Probably what you need to do is replace the colony's queen with one of a docile strain. If you use smoke the queen may take alarm and generally so will the bees. When I know I face that possibility I cheat. I take a spare hive body and bottom board and place it adjacent to and facing the same direction as the bad tempered colony. Then I take the frames out of one hive body and shake the bees onto a sheet in front of the empty hive, looking quickly for the queen on each frame before I shake. I also look on the sheet for the queen and if I find her I squash her. If I don't find the queen I continue until

(Continued on page 523)

Monthly HONEY Report

LAWRENCE GOLTZ

August 10, 1982

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

Wholesale Extracted	**Reporting Regions**								
Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	42.00	37.50	36.00		37.00	38.25	34.40	36.00	34.00
60 lbs. (per can) Amber	42.00	36.00	34.40		34.80	37.50	32.20	35.00	33.50
55 gal. drum (per lb.) White		.56	.58	.56	.58	.62	.54	.58	
55 gal. drum (per lb.) Amber		.50	.54		.56	.59	.44	.56	
Case lots — Wholesale									
1 lb. jar (case of 24)	27.50	24.90	25.80	24.48	26.60	24.50		24.50	24.50
2 lb. jar (case of 12)	26.50	23.30	24.20	22.56	25.20	23.50		22.75	24.00
5 lb. jar (case of 6)	30.00	27.80	26.25		27.50	28.50		26.00	26.60
Retail Honey Prices									
½ lb.	.90		.90	.80	.89	.90		.89	.99
12 oz. Squeeze Bottle	1.50	1.29	1.50	1.34	1.51	1.35		1.20	1.39
1 lb.	1.50	1.49	1.45	1.51	1.59	1.55	1.59	1.59	1.65
2 lb.	2.70	2.59	2.65		2.79	2.60	2.59	2.46	3.05
2½ lb.	3.35			3.45	3.29	3.25		3.35	
3 lb.	4.00	4.25			3.79	3.85	4.00	3.99	4.19
4 lb.	5.00	4.95		4.89	4.89	4.90	4.59	5.00	
5 lb.	6.00		5.95	5.95	5.79	5.60		5.95	6.49
1 lb. Creamed			1.55		1.59			1.59	1.67
1 lb. Comb	2.25		2.25		1.98	1.85		2.09	
Round Plastic Comb	1.75				1.75				
Beeswax (Light)	2.00	1.80	1.90	1.75	1.95	1.90	2.00	1.90	1.85
Beeswax (Dark)	2.00	1.70	1.85	1.65	1.85	1.85	1.95	1.85	1.75
Pollination Fee (Ave. Per Colony)	30.00		27.50		18.00				18.00

Misc. Comments

Region 1

A bumper crop in Connecticut. Massachusetts and looks good in Vermont. Hives are packed with honey with up to surpluses of 100 pounds at end of July. Late flowers are in good condition for a fall honey crop. Nucs started about May 15th have produced a surplus. Bulk honey has started to move again as store shelf supplies are down. Spray damage has been low. Educating the public seems to have helped.

Region 2

Early honey flow in New York state has been moderately good in many parts. Goldenrod looks promising. Honey crop as of end of July is the best in years in Pennsylvania. Prospects for fall crop good. Honey sales slower than normal. A fair honey crop in West Virginia. Very little swarming. Bees in good condition. Central Maryland honey flow extended into

July, with complete supers filled during the month.

Region 3

Ohio has a excellent crop of light honey from the early honey flows. Indiana has a super crop, causing a shortage of containers. Sales have picked up with a new crop coming in. With a big crop and all the surplus honey that has been imported the government may be buying a lot of honey in 1982. Producers who pack cannot complete with the government support price where it is. In Illinois the honey flow was retarded by the heavy rains but during the latter part of July beekeepers were experiencing a better flow from soybeans. The earliest honey extracted was high in moisture content. Honey prices are expected to rise in Wisconsin. Bees have brought in a good crop. Looks like about 100 pounds per colony at end of July. Good moisture conditions. Some honey from basswood. Very little swarming.

Region 4

Bees in Southwestern Iowa are completing a near normal crop of honey with white clover and soybeans completing the year's harvest. Beekeepers have received about a 100 pound per colony average. Heavy rains in Nebraska have brought out an unusual number of honey plants, giving bees ample forage. Honey flow has been steady but unspectacular in S.E. Minnesota. A heavy white clover bloom but most activity was in the sweet clover. Most of the crop has

(Continued on page 535)

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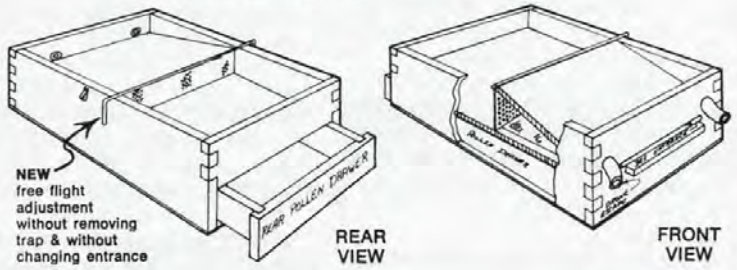

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Capping The News

THE EDITORS

"Beekeeping Small Talk"

Ethylene Oxide Fumigation

IN A RECENT issue of *The Australasian Beekeeper* (July, 1982) was the disturbing news that ethylene oxide fumigation is no longer to be permitted of honeybee equipment in Canada.

The problem evidentily comes from the breakdown of the ethylene oxide into ethylene glycol and 2-chloroethenol which are found in treated combs even a year after and in honey extracted from such combs. Health and Welfare, Canada, feels these are unsafe for public consumption, and fear for the safety of the operators of the fumigation units.

Ethylene oxide is regarded, then, as a carcinogen or cancer causing agent. Hospital use of ethylene oxide is being curtailed or discontinued as more information about its reported effects comes to light in the United States.

The Australasian Beekeeper continues, "The calculated risks to the operator using the material (ETO) would have to be weighed by each of us (Australians) as the circumstances decreed - - -." Australia was considering using ethylene oxide for bee equipment sterilzation.

This comes as bad news for American beekeepers who have, as many of us know, begun to depend on ETO fumigation chambers as a disease control and treatment. The ETO chamber has the reputation of being adaptable to handling various sizes of jobs, they are very effective and are not overly expensive when compared to other forms of disease treatment, or no treatment at all.

We are apparently again faced with a dilemma where we will have to make a decision as to whether the risk justifies the obvious benefits. So many times in the past these decisions were made for us by groups of people outside of the industry, though with the public safety in mind. Very recently there has been some indications of changes in attitudes which may preclude a return to more self determination by individuals and segments of society directly involved with the material or methods under question. New laws or regulations may reflect more input, from people involved in development, manufacturing and distribution as well as use; in other words, laws which hopefully are more fair to everyone but are still protective to the public. For those who still harbor doubts about the safety of certain substances this may be said to be merely a shift in philosophy not a contribution to making suspected toxic substances any less hazardous to the consumer or the others who come into contact with the material. Tradeoffs, in which we accept possible hazards for certain benefits never satisfy everyone, sometimes no one, but they may be necessary.

An indication of a trend may be interpreted by statements in the American Beekeeping Federation Newsletter, Vol. 40, nos 5 and 6, to the effect that there are encouraging signs that attempts to obtain approval for beekeepers to use ethylene dibromide and methyl bromide may be successful. If this is true it may represent a reversal of the past when any evidence that chemicals suspected of being hazardous meant their immediate banning. Not everyone has been convinced by the evidence on hand because even some scientists have proven not to be infallible in making value judgements in regard to the interpretation of or applicaiton of test results from their experiments. This is even more true of lawmakers and regulatory agencies who are sometimes unfamiliar with all of the consequences of the outright bans or limitations imposed by law on new developments in food technology, agriculture or any one of the fields on which people depend for the essentials of living. This liberalization does not replace the need for continued vigilance against unrestrained use of potentially hazardous substances or practices where evidence warrants closer inspection or action.

The liberalization of use of certain chemicals in the beekeeping industry as ethylene dibromide, methyl dibromide and ethylene oxide brings the bee industry into conflict of a kind. While enlisting the help of the regulatory industries to loosen the regulations on the chemicals sorely needed by beekeepers to control pests and diseases, the industry is asking for stricter controls on insecticides which can be very destructive to honeybees.

We can only hope that when decisions are being made in regard to laws that update controls on insecticides or other hazardous substances that these laws, however strict they must be, are tempered by the realization that their application must deal with realities.

Honey Grading Standards

Sioux Honey News (16) 1, 4 carries a summary of the proposed changes in the United States Standards for Grades of Extracted Honey and the United States Standards and Grades for Comb Honey. The standards, if revised, would be combined into the "U.S. Standards and Grades for Honey."

Dr. Robert W. Meloy, of the Research Division of Sioux Bee Honey, in his column in *Sioux Bee News* listed the following proposed revisions:

(1) Combine the U.S. Standards for Grades of Extracted Honey and the U.S. Standards for Grades of Comb Honey;
(2) Replace dual grade nomenclature with single letter grade designations;
(3) Make the soluble solids content a factor of grade determination;
(4) Lower the minimum soluble to coincide with proposed world-wide standards;
(5) Eliminate three of the seven color designations;
(6) Remove net weight requirements for comb honey;
(7) Allow for various shapes and frame materials in comb honey.

For further information on the proposed revision of standards, contact R. J. Groen, Agricultural Marketing Service, U.S. Department of Agriculture, Washington, D.C. 20250.

(Continued on page 496)

Capping The News

THE EDITORS "Beekeeping Small Talk"

(Continued from page 494)

American Association of Professional Apiculturists

Our attention has been called recently to an organization which has had very little publicity, yet which has the potential of producing the very best leadership in teaching, research and extension for the beekeeping industry. I refer to the American Association of Professional Apiculturists.

The first *A.A.P.A. Newsletter* (1) No. 1, issued by the organization, represents one way the association hopes to promote an information exchange between professional apiculturists. "There is no common forum in which professionals can air their ideas, come to a concensus and become a forceful voice in determining the future of bee-related sciences and education in the United States," says the newsletter.

Dr. Malcolm Sanford, apiculturist at the University of Florida, Gainsville, Florida is the editor. He may be reached by writing to him at 202 Newell Hall, University of Florida, Gainsville, Florida 32611 or calling 904-392-1801. He also edits the Florida beekeeping newsletter *Hum of the Hive.*

Enrollment information may be obtained by writing to the secretary of A.A.P.A. Dr. Eric Mussen, Department of Entomology, University of California, Davis, CA 95616.

Our congratulations go to the A.A.P.A. for taking an important step in providing a communication link between professionals in the field of apiculture. *Gleanings In Bee Culture* extends to the organization our best wishes to the new publication and will follow with interest the activities of members through the A.A.P.A. newsletter.

Africanized Bees

Through a reprint of an article in *Apiacta* 17 (2):58 & 60 (1982) comes some late information about the Africanized bees in Brazil. Authored by Dr. L. Segui Goncalves, a Brazilian researcher, the paper has some interesting things to say about recent developments in South America in general and Brazil in particular.

The author cites research which showed that "the agressive behavior of Africanized bee populations tested in two different climatic conditions in Brazil was much more influenced by external factors than by the bees' genotipic (hereditary) composition."

"Even though the Africanized bees are more agressive than the European bees, the Africanized bees have changed beekeeping in Brazil. Today it can be said that thanks to the Africanized bees the beekeeping industry is better organized and the honey production is increasing each year. The beekeepers are slowly adapting themselves to the Africanized bees and it can also be said that the Africanized bee of Brazil is no longer a reason for one to renounce beekeeping. Some beekeepers still claim that it is difficult to handle the Africanized bees and prefer to work with European bees, however, in the states of Sao Paulo, Parana and Santa Catarina there are many beekeepers who prefer today to work only with Africanized bees, especially because of their high productivity."

Our thanks to Dr. Bill Wilson of the U.S.D.A. A.R.S. WR, Honeybee Research, Laramie, Wyoming for sending us a copy of the reprint. □

Ross Brothers, Second Generation Beekeepers

Bill, Tom and Paul Ross run several thousand colonies of bees around Valyermo, California, about 100 miles from Los Angeles in what is called the "upper desert"; in other words high enough to enjoy some snow when the temperature does go down during the winter months.

The Ross brothers are second generation beekeepers. Their father homesteaded the land (180 acres in the beginning) early in the century.

The photographs were taken by H. H. Schumacher of Pasadena, California in the early fall several years ago. The brush in front of the hives is California buckwheat, but the main bloom was over at the time.

Above: Beehives in the upper desert of Southern California, Photo by H. H. Schumacher.

Left: Bill, Tom, and Paul Ross. Photo by H. H. Schumacher.

Questions and Answers

Q. I would like your opinion on a couple of questions I have:
(1) If I split a strong colony in two deeps with 10 & 12 frames of brood and gave the queenless portion a young queen, would they be able to make enough honey and build up enough to make it through the winter?
(2) If so, which would be the best method of going about it:
(A) To set the queen and all but 2-frames of brood off on another stand, thereby allowing the field hands to go back to the original location; or,
(B) To take half the brood and bees to another location and give a young queen?

We generally have a good flow from asters and goldenrod in the fall, plus tobacco, corn, and such. D.B.

1 A. In answer to (1), yes, a nucleus made up in the manner you have described would probably build up to make it through the winter if you have, as you say, late season honey flows but you are pushing the limit of the season for making divisions (late June or early July). It would have been much better to have made your dividsions early in the season, in late April or early May.

In regard to question (2) I feel that either A or B would be satisfactory: whichever, from your own experience gives the better result. With brood in the divisions the majority of the bees will be held on the combs and little movement will take place back to the original locations by the bees. You may also wish to try placing the division on top fo the parent hive with the inner cover between, first placing a piece of window screen over the hole in the inner cover. The half-round hole in the inner cover rim will serve as an entrance or such a slot provided if not already present. When the division is well established it can be moved to another stand, adding a bottom board and the covers.

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Q. Recently, I was inspecting one of my hives, with the help of my neighbor, and was amazed at what I discovered in the brood chamber. The brood chamber was made up with two shallow supers with shallow frames in them, which I bought like that.

While prying the queen excluder off I pulled about half of a comb out with the excluder. At first my neighbor and I thought a frame had broken, but a closer look indicated there was never a frame in that slot. The bees had built a perfectly sized comb that was spaced just right and was being used well.

The only thing wrong was that the comb was attached to the excluder.

I understand that it is best to use a deep super for the brood chamber but I have gotten a fair amount of honey from this hive last year. H.A., Florida.

A. When a frame is left out and the space is not adjusted the bees will fill this vacant area with comb, either attaching it to an overhead anchor or building it crosswise.

There is no good reason why a three quarter depth (6⅞") hive body or even a shallow depth (5 11/16") unit cannot be used as a brood box by the hobby beekeeper. Two deep hive bodies as brood chambers are about the right size for northern beekeepers, seem to suit the bees and are the most efficient for the commerical beekeeper (including the use of deep supers). There are advantages to having both hive bodies and supers the same depth, whether you decide on deep (9⅝"), medium or shallow units.

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Q. In one location I have five hives each consisting of a brood chamber of two deep supers and a deep (surplus) super separated by a queen excluder. One of the colonies in this location insists on building cross-combs in the 3rd story. Several times I have scraped off the cross combs but they build it right back again. I eventually replaced most of the worst frames with new frames and the cross-combing diminished quite a bit but not entirely. What can you tell me about this?

Secondly, I have a hive in my back yard which I watch pretty closely. This hive is also a 2-story brood nest, and both brood supers (deeps) have been kept full of eggs, brood, pollen, etc., all season. This hive sits on a hive monitor. When installed on the monitor it weighed 55 pounds; now it weighs 165 pounds. Over the last nine days, it has gained an average of four pounds per day. About a month ago I put a medium super of foundation on and so far they have done nothing in the third story except chew wax from around the edges of the foundation. They have drawn no comb at all.

My question is , where is all that extra (added) weight going? The brood supers appear to be full as I mentioned, but I can't see where they're putting the stuff they're bringing in. L.N., Pennsylvania.

A. Bees do not usually build cross combs when the frame is fitted with full sheets of wax foundation which are fastened securely and in proper alignment in the frames, and are evenly spaced with either eight, nine or ten frames in the super. If just one frame is removed in the center of the super and the other combs are not distributed to equalize the spaces between the frames the bees will build cross combs, that is, combs at right angles to those in the frames, in the empty space.

The fact that the bees refuse, or cannot build comb from the foundation in the medium depth super indicates that the honey flow came to a rather sudden end. Even with a light flow bees may discontinue carrying nectar into the supers and will deposit it in the brood chambers. Late in the honey flow much of the emerging brood is not replaced with eggs but the cells are filled with incoming nectar. This can easily escape detection, yet contributes to the weight gain and accounts for the lack of activity in the supers.

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Q. I have been using slatted racks in all my colonies. I have had only ten colonies for several years. I have used slatted racks because some friend recommended them and they seem to make sense. What is the current feeling about them by the experts? L.T., New Hampshire.

A. I don't know what the experts think of slatted racks but I suspect you can probably make as good a judgement as anyone from your experience in your area by removing

(Continued on page 500)

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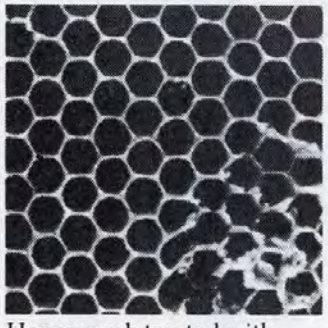

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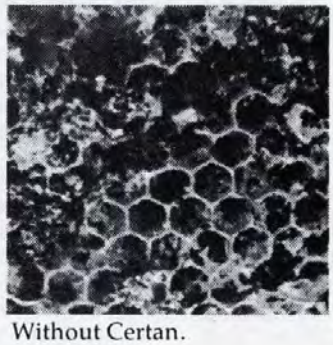

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Questions and Answers

(Continued from page 498)

several and observing the difference if any. They are an added expense, of course, whether you buy them or make your own but under some conditions this extra investment may be justified. It all depends upon how much you wish to concentrate on the utilization of all of the space in each hive. The slatted rack is intended to allow more of the lower hive body to be used by the queen for brood rearing by reducing brood chilling drafts from the entrance. Perhaps readers with more experience with slatted rack use would care to comment and this information can be passed along.

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Q. I have two hives of bees, who refuse to go higher than the food box. I had excluders on them. I took off the excluders and still no good. What is the problem? The brood and food box are full. B.M., Texas.

A. The likely answer is simply that the honey flow slowed down or ceased when the brood and food chambers became filled. Nectar was coming in as the combs full of brood emptied and the bees filled the empty cells with honey from the diminishing flow as is only natural, rather than carrying up into the supers.

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Q. I caught two swarms this year, both about the size of a hat. I put both swarms into full depth supers on undrawn foundation. Both hives were invaded by wax moths. My question is this. Would it be better to hive a small swarm in a shallow or medium super instead of a full depth hive body in order to keep the wax moth out? H.W., Texas.

A. Apparently you have much more problems with wax moths in the southern states than we do here in the North. Hiving swarms in a three-quarter depth hive body may help the new colony to extablish a brood nest quickly and keep the adult moths from laying eggs or the moth eggs from developing into the destructive larvae. I do wonder though, even in full depth hive bodies, how wax moths are able to overcome the vigilance of a vigorous swarm of bees, attack the new, light colored wax comb and cause damage. I wonder if the bees were not handicapped by some other problem, like queen failure or food shortage. During normal development of a brood nest by a newly hived swarm defensive behavior is usually at a compartively high level.

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Q. How far do bees travel from the hive in a straight line to find what they need? I have just started beekeeping and have increased from five to fifteen hives this spring. I cannot make up my mind about how far apart to keep my apiary locations. If they travel a mile or so then I have no problem.

A. The flights in the foraging area of colony of bees may vary in extent according to the terrain and the location of the nectar and floral sources. Honeybees may range up to two or three miles or even more in any direction from the hive if the land is the same level but if flight is restricted, as in a valley with surrounding hills. the flight pattern may be irregular. Most nectar and pollen is gathered within a mile radius of the apiary. As the flight distance increases the expenditure of energy on the part of the forager becomes much greater until the distance and difficulty makes it impossible for the field bee to reach even rich fields of nectar plants. Bees seem to be able to use some selectivity in this respect. Other factors may be involved beside distances, such as prevailing winds, flight obstacles such as woods, buildings and hills and mountains. Generally about two miles is considered minimum distance to be left between apiaries.

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Q. For sixty years I have kept bees in an area formerly used for dairying. Only two dairy farms remain. There are at least a hundred new homes with lawns, covered with dandelions and clover in season. For several years I have thought the flow of field bees was not as large as it should be. The hives are packed with bees and brood, I have never seen better. Where are the field bees? Do not say skunks or opossums, I know about them. I presume that thousands of bees are killed each week by lawn mowers. In September and October the bees do just as well as fifty years ago. What do you say? J.T. Pennsylvania.

A. There are undoubtedly some foraging bees killed on white clover in the lawns, if not by lawnmowers, by pesticides, but I don't think this is the reason for the noted absence of foraging bees. I think the answer is the general absence of a variety of nectar and pollen plants through the season when the bees are at full strength, the weather is favorable and the beekeeper expects to see a strong nectar flow in progress with heavy movement of bees in and out of the hive. The stimulus of an ample nectar and pollen flow from a wide variety of plants simply does not exist to the extent that you had years ago and the bees do not fly as much. There is enough of a honey flow in the spring to stimulate brood production and colony growth but after the colony reaches peak strength there is not enough forage to keep them busy. Another thing to consider. The white clover in the lawns is only a small representation of the amount that once would have occured in the dairy farm pastures. When dairy farms depended upon white clover pastures for feed, rather than the baled or chopped forage or concentrates, the white clover may have been in better condition for bee pasture as well. In the average lawn white clover is often considered a "weed", to be eradicated as soon as it appears. Lawn care information tends to perpetuate the idea that the ideal lawn is one free of everything except grass. Weed killers remove the clover. The dairy cattle pastures in former years were grazed heavily, thereby removing weed competition, the cattle improved soil conditon by adding manure and the farmer limed the soil periodically to raise the pH to a suitable level for the white clover to flourish, and this on hundreds of acres, rather than an occasional tiny lawn. Also, clover in lawns is under stress from air pollution, poor soil conditioning, less sunlight and in general much less favored from a beekeepers' standpoint than the lush, thick stands of white clover you were witnessing when the dairy farms were around. In September and October the bees in your area again become busy working the goldenrod and asters which may have actually become more abundant due to the decrease in the number of small farms and more idle land.

We are all searching for reasons why our bees are not doing as well, especially we who remember some of the better crops that our areas were once capable of. Conditions have changed, what was once farm pastures rich in clovers are now soybean and corn fields, and land formerly grown up in a wide diversity of secondary nectar and pollen plants has now been cleared for intensive farming or has been used for residential or industrial use. We keep looking for other reasons when the real reason for the inactivity of the bees is evident if we consider the extensive changes brought about by the demands of our increasing population on our land, water and air resources.

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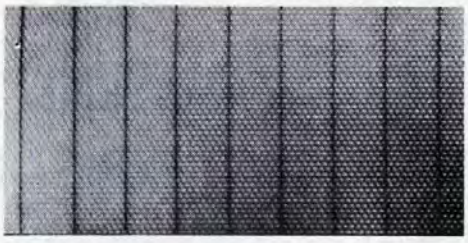

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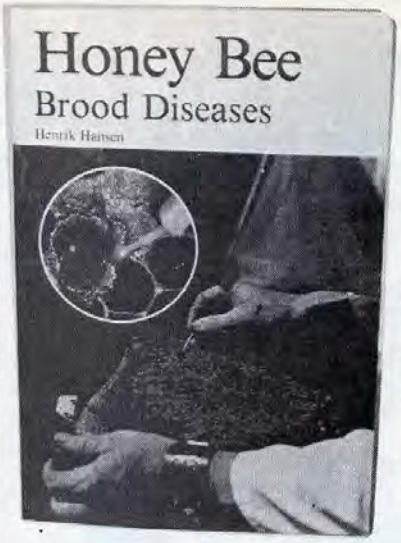

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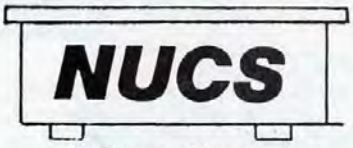

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Honey Drying in The Hive

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Summary

EXCESSIVE MOISTURE CONTENT in the honey causes fermentation, rending honey useless. My research, development and testing during the last few years produced an understanding on how to improve the honey drying process in the hive. The beehives equipped with temperature controlled ventilators produced honey with at least 1% lower average moisture content. Furthermore, because of improved honey drying air supply, an increase of 20% plus honey production was achieved.

The causes of clustering on the front wall of the hive are now fully understood and described in this article.

Figure 1. H.D.V. in it's proper poistion on the hive.

Honey Drying Air Requirements

The nectar collected by the bees from different plants contains about ⅓ sugars and ⅔ water. Therefore, to produce one pound of honey the bees will gather three pounds of nectar, from which about about two pounds of water must be evaporated. How much air is required to evaporate one pound of water? This depends on temperature and relative humidity of ambient air. Table 1 shows the volume of ambient air needed, at a given constant temperature and relative humidity, to evaporate one pound of water. For any given relative humidity (except 100%) the air requirements are about four times higher at 50°F. compared to 90°F. ambient air temperature. At constant air temperature and 100% relative humidity no water evaporation is possible. Such air can only absorb additional moisture if it is warmed up to higher temperature.

How Does The Air Enter The Hive

When the bees, anchored to the bottom board, are fanning their wings to dry the nectar, they draw the air out of the hive through the bottom entrance and by doing so, they create partial vacuum within the hive. With the existing hive configuration the air enters through unpropolized inter-

TABLE 1

Ambient air requirement in cubic feet to evaporate one pound of water. Assumptions: 1. Air outlet is at the same temperature as air inlet. 2. Outlet air is at 100% relative humidity.

Temperature of ambient air, degrees F. \ Relative humidity of ambient air entering the hive	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	99%
50	1,703	1,892	2,129	2,433	2,838	3,406	4,256	5,677	8,515	17,030	34,060	170,300
60	1,207	1,341	1,509	1,724	2,012	2,414	3,018	4,023	6,035	12,070	24,140	120,700
70	868	964	1,085	1,240	1,447	1,736	2,170	2,893	4,340	8,680	17,360	86,800
80	633	703	791	904	1,055	1,266	1,583	2,110	3,165	6,330	12,660	63,300
90	468	520	585	669	780	936	1,170	1,560	2,340	4,680	9,360	46,800

faces between hive components and any holes or cracks in the walls or inner cover. Therefore the area for drying air entry into the hive may be different for each hive. This limitation of drying air supply, when needed, places a constraint on bees, with respect to how fast and how much nectar they can dry in a given time. Indeed, this becomes a limiting factor on how much nectar the bees bring in each day during a nectar flow.

Testing of Honey Drying Ventilators (h.d.v.'s)

To reduce the moisture content in the honey I have initially tested simple ventilators, consisting of a 4-sided box, with holes and/or slots in the front member. These ventilation openings allowed warm air to escape during cold days and nights. Because of that the bees repeatedly propolized the screens on the ventilation holes within a few days of installing the ventilator. Briefly, then, the bees do not accept this open type of ventilation.

Subsequently, temperature controlled honey drying ventilators (abbreviated h.d.v.'s), were tried and the bees readily accepted them. Figure 1 shows the h.d.v. in it's proper position on the hive. Briefly, the h.d.v. consists of a 4-sided box about 2″ high, with a slot in the front member. This slot is covered with a wooden door, which is attached to and actuated by a thermostatic strip, pre-set to start opening the door at 68°F. to 70°F. With the increase in temperature, the nectar flow increases, so does the ventilation opening. When the ambient air temperture drops down to 68°F. and below, the ventilator is closed to prevent warm air escaping from the hive.

When the bees are drying nectar, the drying air enters the hive through the h.d.v. at the top and the moisture laiden air is exhausted through the bottom entrance. When the drying process stopped, the warm air will rise to the top of the hive and some warm air will escape out through the slot in the h.d.v. while the door is open. This gentle movement of air continues to slowly dry the honey even in the capped state.

During good honey drying weather, when the bees were drying the honey, many temperature readings were taken by inserting a thermometer into the bottom entrance, on the hives with and without h.d.v.'s. The typical temperatures of air exhausted from the hive after honey drying, are shown in table 2. Please note that the temperature of exhausted air from the hives without h.d.v.'s is about 4°F. higher compared to the hives with h.d.v.'s.

Clustering on the Front Wall of the Hive.

Clustering of bees on the front wall of the hive, at and above the bottom entrance, is a common sight in summer. In the past it was thought that such clustering was caused by high ambient air temperature. However, clustering was observed to take place at ambient air temperature below 70°F. The clustering was repeatedly observed to take place when the following two conditions occured simutaneously, irrespective of the ambient air temperature.

1. New collected nectar is available in the hive.

2. The relative humidity of ambient air is high, at or near 100%.

These two simultaneous events are the key to understanding the cause of clustering. The bees are trying to dry the nectar while the ambient air is too moist to absorb any additional moisture. To improve the air circulation, the bees, which are not involved in nectar drying, move out from the areas where undried nectar is deposited. These bees move out to the empty supers above, if the hive is over-supered. In this case only a minor cluster will form, see Fig. 2. If the hive is not over-supered, a major cluster will occur, covering one to two front walls of the brood chambers. In both cases, with minor or major clustering, the bees bodily close off the bottom entrance and any other holes in the walls. Fig. 2 shows a minor cluster in front with a bunch of bees on the right side wall of the brood chamber. There is about ½″ diameter knot hole in the brood chamber wall, which the bees have closed off to restrict air access to the hive. This picture was taken on a showery day, with ambient air temperature at 70°F. Having restricted the air access to the hive, the bees are warming up the air inside the hive, so that it can absorb additional moisture. The moisture

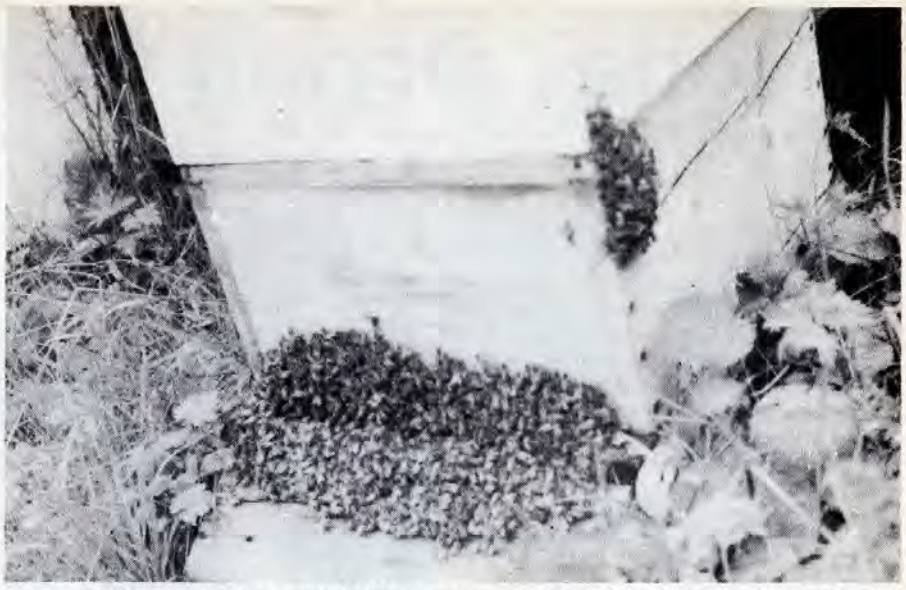

Figure 2. Minor clustering at bottom entrance. Bunch of bees on the right wall of brood chamber, bodily closing off ½″ diameter knot hole.

TABLE 2
Temperature of the air exhausted from the hive, with and without h.d.v.'s.

Ambient and inlet air temperature, degrees F.	Outlet air temperature at bottom entrance, degrees F.	
	With h.d.v.'s	Without h.d.v.'s
70	70 - 74	74 - 79
72	72 - 76	76 - 82
75	75 - 79	79 - 84
80	80 - 87	83 - 93
87	86 - 93	89 - 93

laiden air is being exhausted by the bees through the bottom entrance. My temperature measurements taken in the bottom entrance on clustered hives gave readings up to 20°F. higher than the air outside. No major clustering occurs on hives with h.d.v.'s and minor clustering was observed only on one out of four hives.

Reduced clustering on the hives with h.d.v.'s leads to a conclusion that, because of improved drying air supply, the hives with h.d.v.'s always have lower inventory of raw or semi-dry nectar.

The above imformation confirms that the clustering on the front wall of the hive is precipitated by high relative humidity in ambient air. Such clustering constitutes only one of the modes of honey drying process use by the bees when the relative humidity of ambient air is high, at or near 100%.

Field Reports on h.d.v.'s Performance

The field reports received from h.d.v.'s users in autumn of 1981 have confirmed the following:

1. Where the moisture measuring equipment was available and moisture measured, the honey from the hives with h.d.v.'s contained at least 1% less moisture compared to honey from the hives without h.d.v.'s. Where moisture was not measured, the honey was reported thicker and heavier, by visual observations.

2. Where a reasonable nectar flow existed, the hives with h.d.v.s produced more honey, 20% plus. The reasons for this increase are discussed under "Increased Honey Production".

Some h.d.v.'s users reported reduced swarming. All reported either great reduction or elimination of clustering on front walls of the hives.

In summary, the hives with h.d.v.'s produced higher quality honey and more of it. Copies of several field reports were submitted to the editor as evidence that the infromation presented here is factual.*

Increased Honey Production

For a good honey crop to materialize, the following three conditions must exist simultaneously, i.e.

a) Good nectar flow with abundant bee pasturage,

b) Good weather for nectar gathering,

c) Large population of bees in the hives.

With all the above elements present, further increase of honey production is possible by improving the honey drying air supply. The users of h.d.v.'s reported increase in honey production fo 20% plus, for equally strong hives. How can it be explained? Basically there are two contributing factors.

1. The nectar brought in by the bees has a short shelf life. It must be dried to honey within a day or so, otherwise it will start fermenting. With adequate honey drying air supply through the h.d.v. at the top, only a fraction of bees that otherwise would be engaged in drying honey, can dry more honey, faster. Therefore more bees are released for field work to gather more nectar.

2. Table 2 shows that the air temperature exhausted from the hives without h.d.v.'s during honey drying, is at least 4°F. highrer compared to the hives with h.d.v.'s. This increase in temperature requires energy, which can only come from additional consumption of honey. Analytical calculations of Ref. 1 show that the energy thus wasted is equivalent to at least 20 pounds of honey during the summer. This additional honey consumption does not take place in the hives with h.d.v.'s, because the honey drying air is exhausted at lower temperature.

General Discussion

The information presented in this article is factual. However, because it was produced by inventor-manufacturer, some beekeepers may be somewhat skeptical about the claim that the hive with h.d.v.'s have increased honey productivity.

To generate an impartial confirmation of these facts, I would welcome and hope that one of the North American Academic Institutions, associated with beekeeping, will volunteer to institute a comprehensive test program on h.d.v.'s performance.

This newly discovered information on reduction in moisture content and improved honey productivity will be of interest and benefit to the entire beekeeping industry.

Conclusions

1. Clustering on the front wall of the hive is not precipitated by high temperature, as previously thought. It is precipitated the modes of drying honey, used by the bees, when the relative humidity of ambient air is high, at or near 100%.

2. The honey from the hive with h.d.v.'s contain at least 1% less moisture, on the average, compared to honey from the hives without h.d.v.'s.

3. For equally strong hives, where a reasonable nectar flow existed, the hives with h.d.v.'s produced more honey, 20% plus, compared to the hives without h.d.v.'s.

4. The improved honey drying conditions on the hives with h.d.v.'s accompanied by absence or substantial reduction of clustering may be responsible for reduced swarming.

References

1. "Report on Clustering Bees on Front Wall of the Hives in Summer," *Canadian Beekeeping*, Vol. 8, No. 3, Fall 1979.

*Copies of field reports on file at *Gleanings In Bee Culture*, P.O. Box 706, Medina, Ohio 44258.

Joy With Honey by Doris Mech. Women's Aglow Fellowship, P.O. Box I, Lynwood, WA 98036. 135 pages, incl. index. Soft cover. $4.95. This neat little book (5" x 8") is a cookbook which will effectively promote honey consumption. Every recipe from Apple Muesli to Zucchini Bread uses honey. In between apples and zucchini, the author has included breakfast ideas, beverages, breads, salads, dressings, meats, vegetables, cakes, pies, cookies, desserts and canning recipes.

The artwork, by Vicki Dorsey and Dick Markle adds another dimension to the contents. Each recipe is kitchen tested and there are such a number of such variety that this recipe reference book could supply anything from snacks to formal family dinners.

This is one of the nicest recipe book it has been our pleasure to review.

L. Goltz

Bees and Gardens

LAST MONTH I wrote about the relationship of bees to garden seed growing but I find that there is more to the subject than I had anticipated.

I asked Dr. Eric Mussen, Extension Apiculturist of California, to contact the Department of Horticulture at the University of California at Davis for information on garden vegetable seed growing. Also, another recent event called attention to the compexity of breeding superior plants and producing seeds for the gardener. Dr. Eric Erickson of the United States Department of Agriculture, Madison, Wisconsin, speaking at the 10th pollination conference at Carbondale, Illinois last July, described the difficulties of developing hybrid carrot seed for gardeners and truck farmers.

I had hoped to move on to the ornamental plants this month but with this new information coming in it may be interesting and useful to review some additional facts about seed growing among the vegetable crops.

Most annual vegetable seed crops offer no major hurdles in seed growing unless hybrid seed is the object. One exception may be the cucurbits (cucumbers, muskmelons and squash) and watermelons. Cucumbers are about 50% hybrids. To produce hybrid cucumber seed the growers plant fields to mixed seed which produce about 90% gynecious (bearing the genetic trait for producing only female blossoms) and 10% normal plants. The normal plants produce male and female flowers, provide pollen for all female flowers and all non-hybrid cucumbers are then removed. The gynecious lines are perpetuated by treating gynecious plants with gibberellic acid which induces production of male flowers on the vines and provides pollen for selfing.

Squash, 50% of which is hybrid seed, have male sterile lines and in muskmelons, of which only one tenth of one percent (0.1%) is hybrid seed, someone has to remove all male flowers from one of the lines. Only two hundreth of one percent (0.02%) of watermelon seed is hybrid. Breeding seedless (hybrid) watermelons is a rather complicated business involving chromosome manipulations while crossing lines. No doubt open-pollinated melon seed will be in the seed catalogs for some time to come.

Biennial vegetables grown for seed (the seed is formed during the second growing season) have some peculiarities that must be considered by seed growers. For example, onion seeds planted in October will produce bulbs the next June, but onion seeds planted in August will produce seed heads the next June. This timetable has reference to the seed growing areas, of course. Temperatures affect plant development during these growing periods. Colder temperatures inhibit these critical vernalization processes in biennials and a sudden winter hot spell could cause abnormalities like flower stalks producing large leaves instead of flowers. When growing biennial vegetable crops for seed they must be planted early enough the first season to be past their "juvenile" state going into winter; otherwise, no flowers and seeds next year.

Just a few notes on other hybrid vegetable seeds which may be available and the percentages of hybrid seed of the total harvested: Cabbage (20%), broccoli (5%), cauliflower (5%), carrots (5%), and onions (33%).

Without going into the complications of the raising of annual and biennial vegtables for their seed it should be pointed out that these "unseen" fields are critical to the home gardener's supply of garden seeds in the spring planting season. Honeybees may or may not be involved in either seed production or the food producing state which you see in your garden but you can be certain that there would be considerably less variety and quite likely fewer and poorer quality seeds for planting were there not honeybees to pollinate where needed. Up to six colonies of bees per acre may be needed for adequate pollination of some vegetable seed crops but the average is about two or three colonies per acre. Honeybees tend to be distracted from vegetable seed pollination by nearby plants with more or better nectar and pollen.

The common vegetables seed do not require a dormancy period before they will geminate as do other seeds such as the hard coated legume seeds, morning glory, walnut and hickory, for example. Some common seeds, other than garden seeds, which will germinate as soon as they are mature are white oak acorns and many of the cereal grains. Vegetable seeds are not normally planted soon after harvest, as we in the northern states are aware. Seed growers are therefore delaying germination by drying the seeds to six to seven percent moisture content at 95 to 100 degrees F. Seeds will keep well at room temperature if not allowed to regain moisture. Seeds which are allowed to regain moisture in storage lose vigor and their seedlings cannot fight cold weather or crusted soils very well. Seeds are subject to molds at about fourteen percent seed moisture. They also lose their ability to germinate and become non-viable at the higher moisture levels. For every ten degree F. decrease in temperature the storage life of well dried seed is doubled. For every ten percent seed moisture reduction from fourteen percent down to six percent, seed storage life is doubled. A garden seed packet of paper is not as moisture proof as are plastic or foil packets but if the garden seeds are properly cared for in bulk and then packaged just prior to the planting season there is usually no problem with seed quality due to moisture exposure.

So much for vegetable growing and honeybees for the present.

When you read this column in September many beekeepers will have extracted their honey crop, particularly in the southern states. When there is fall honey being made it may be better to remove honey from the hives before the late gathered honeys are mixed with the usually more desirable early-gathered honeys. In any event do not remove combs which have over one fourth of the cells uncapped. The only possible exception may come at the very end of the season when even the uncapped honey is very nearly finished by the bees prior to capping. Normally, an uncapped cell of nectar indicates that the bees do not consider it as honey ready for storage. There is no artificial drying process used by man that is likely to exactly duplicate the complete ripening of honey by the bees. Don't attempt the impossible.

Removing honey from the hive too soon can only lead to a loss in flavor and thinner honey that, under poor storage conditions, could ferment. Idealy, honey should not be removed from the hive until you are ready to extract, but if you have a warm, dry room to store the honey it will keep in the comb satisfactorily. Avoid storing honey in cool, damp basements or exposing the supers of comb to the outside air when humid conditons exist. Moisture can be absorbed through the cappings in a damp atmosphere, raising the moisture content a percentage point or more. Any honey with a moisture content of 18.5% or above is reaching the critical moisture level when yeasts, which are found in all non or lightly processed honey, begin to grow. This leads to the characteristic "sour" taste of fermented honey.

Processing your honey crop after extracting from the combs is sometimes not understood and causes some confusion in the minds of beginning beekeepers. This is a needless concern if only a few of the principles are remembered. Heating honey is not always essential to the keeping qualities of properly ripened honey but it is a convenience for those who must bottle the honey and place it in stores or in other retail outlets until purchased by the customer. Heating also preserves your honey in the liquid state until the purchased bottle of honey is consumed, seemingly an unimportant point to the beekeeper who appreciates the excellent flavor of granulated honey, but a view not always shared by the buyer. Many of our best table honeys will remain liquid for a considerable length of time unheated but eventually nearly all honeys will granulate or "turn to sugar". There is considerable variation among honeys in this tendency to granulate, depending mainly on the flower source, the degree of processing the honey has undergone and the storage conditions. Granulation does not change the flavor of honey and once it has been restroed to the liquid state there is no quality loss if the heating is properly done. Heat, however, moderately and carefully used, does not appreciably change the flavor of honey although some object on the basis of the changes it causes in the organic components. For example even moderate heat (140-145 degrees F.) which is the recommended range for processing honey at home, can destroy yeasts, destroy enzymes and alter the balance of some of the heat-sensitive nutritive elements such as vitamins. Use your own judgement in respect to the use of heat and how much you wish to use.

It is often desirable to strain honey through a medium or fine mesh screen of cotton or nylon cloth. Straining removes the course particles of wax as the honey comes from the extractor and if carried another step it will also remove the finer particles of wax and other impurities that have passed through the course screen. There is no nutritional loss or alteration of the chemistry of the honey during straining if only cloth is used. Honey processed through commercial filtering systems removes much of the colloidal material which may include pollens. One of the most efficient, though slower way of obtaining clear, sparkling honey without losing flavor is to allow the honey to clarify by settling in a bulk storage tank for several days.

A combination of heating honey to 140-145 degrees F. in a water jacketed container (for those who are bottling honey for the retail trade or prefer liquid honey for home use), straining through a fine mesh cloth and settling in a bulk tank for a dav or two is all that is needed to produce a quality honey that can match, and sometimes surpass, the commercially packed product in appearance and nutritional value. All this can be done at home of the keeper of only few hives of bees with a very minimal investment in a double boiler or jacketed tank and a storage and bottling tank over which a strainer cloth can be stretched.

Next month I will continue a discussion of some the plants grown in the garden for the pleasure of their beauty and will talk about the part bees take in the growing and the reproduction of these ornamental plants.

Beekeeping in Nepal

By ROGER A. MORSE
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Ithaca, NY 14853

IN NEPAL THE beekeeping program has been under the guidance of UNICEF (United Nations International Children's Emergency Fund), more commonly called UNCF. At first, one might think UNCF is a strange agency to sponsor beekeeping but their reasoning is simple. If beekeeping can increase a family's income and give diversity to the diet, it will be a great help to the children. I was told that in Nepal half the children die before five years of age; thus, there is a great need for help.

UNCF also has a great resource in wooden crates used to ship goods into the country. These are easily made into beehives. During the past few years this has been done and until recently everything had been going well with several families benefiting from UNCF's bee project. The bee used is the local Indian hive bee, *Apis cerana*, which is common throughout Asia. As far as anyone I talked to was aware, there were no colonies of European honeybees in Nepal. That is difficult to believe and I have no doubt some were introduced in the past and failed as they have done in most of the rest of Asia; the chief problem has been mites that the Asian honeybees harbor and can tolerate but that destroy European honeybees.

"As far as anyone I talked to was aware, there were no colonies of European honeybees in Nepal."

About two years ago beekeepers began to complain that their bees were disappearing. When samples of dead brood were sent to the Rothamsted Experiment Station in England a strain of sacbrood was identified. All textbooks on beekeeping clearly state that sacbrood, a virus disease, is a common problem everywhere, but one that bees can overcome. Experts abroad were asked advice and the consensus was that one should look for a more basic problem since sacbrood would not cause the death of many colonies.

(Continued on page 510)

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Beekeeping In Nepal

(Continued from page 507)

This spring I was asked by the Food and Agriculture Organization (FAO) of the United Nations to make a brief survey of the situation in Nepal. It was appalling! Rarely have I seen a bee disease situation so serious. All the symptoms indicated sacbrood alone was the cause of the problem. I found only one colony with symptoms of any other disease and that was a queenless colony infested with the mite *Varroa jacobsoni*.

It was difficult to find live colonies to inspect. I visited 11 apiaries and/or locations and found only 18 live hives. I traveled 35 kilometers east of the capital city of Kathmandu and 200 kilometers west. Every beekeeper I met told me the same story and I saw many empty hives. All of the colonies I inspected had a scattered brood pattern and dead larvae. Most larvae had died in late larval life in the typical position of those killed with sacbrood — lying flat in the bottom of the cell with the head raised slightly. The dead larvae were easily removed from their cells. None of the larvae had the tough, brown, crusty exterior one normally associates with sacbrood. However, they did have the typical watery contents.

Samples of dead larvae, typical of those killed by the disease were collected and delivered to Dr. L. Bailey of the Rothamsted Experiment Station in England. He confirmed that the same sacbrood virus he had identified earlier was present in the samples I had taken. It was a virus he had first found in *Apis cerana* in Thailand, as well as in dead brood of the same species from Poona, India. Apparently it is found in this honeybee species only. However, beekeepers from Thailand and India did not report that it was a serious disease.

I believe that the bees in Nepal may have been under unusual stress. There is no question that people have been doing their best to increase the number of colonies of native bees in the country. Also, the human population of Nepal is growing and is putting more pressure on the land; this means fewer flowers on which the bees may forage. It is suggested that the greater number of bees, together with fewer flowering plants, may cause bees to forage longer and harder to stay alive and this pressure may have caused sacbrood to become rampant. This is all theory

but at present it is the best explanation we have.

I did find two colonies of bees that were apparently able to tolerate the disease. Both colonies were increasing in population according to those who were watching them, unlike the rest of the colonies around them. They had obviously lost much brood and their brood patterns were spotty. However, the bees appeared to have the ability to remove dead brood promptly. Virus diseases of honeybees spread in a manner different from bacterial diseases but it did appear that all of the colonies in Nepal will not be lost and that the industry may recover. However, at present I fear there may not be enough bees for pollination. For example, I heard reports, which were not verified, that the crop of mustard seed was smaller than normal. One of the things I advised local officials to do was determine if this was a fact or not.

Which Bee? Which Hive? A Question of Policy

In thinking about the future of beekeeping in Asia, two questions must be answered. First, should European bees be introduced and, second, should one advocate the use of Langstroth-type hives or the more primitive top-bar hive? It is not difficult to find people on opposite sides of both questions. In Nepal I found most of the persons with whom I talked preferred the local hive bee, *Apis cerana*, and top-bar hives. However, I believe European bees should be introduced into all Asian countries and, in my opinion, the top-bar hive, anywhere on Earth, is a waste of man's time, money, and effort. More important, I suggest events of the past decades have already set the scene for what is to take place in Asia despite what any of us think.

The success that beekeepers have had with European bees in Japan, Korea, Formosa, China, Thailand, and Burma indicates there is little debate about which bee is best. China is the best example; she has four million colonies of European bees and only one million of the local hive bee. In Japan the number of native bees is becoming smaller each year. No Japanese beekeepers keep the local bees commercially. Economics will settle the question. European honeybees produce more with equal effort. The absconding habits of the native hive bees are such as to discourage their use. I doubt if the native Asian honeybees will disappear; there are too many remote areas where they thrive.

The question of which hive to use may be more difficult to answer. Many people, for reasons I do not understand, think that honeybees require elaborate quarters. I have never seen a top-bar hive that did not require as much, or more, effort to make than a simple Langstroth hive. Most of the top bar hives I have seen have cross combs or double combs on a single bar. This was true of many in Nepal, too. The chief problem with the top-bar hive is that one cannot control comb building. A full sheet of foundation cannot be used because there is nothing to support it and it will stretch and break. When one uses

(Continued on page 527)

Research Review

By DR. ROGER A. MORSE
Research Editor of Gleanings
Professor of Apiculture
Cornell University
Ithaca, NY 14853

Misinformation on Pollination

EVERY SO OFTEN I hear or see something about honeybees that is wrong; often it is so bad it makes me angry. I have before me a paper entitled *Notes on Blueberry Production in Michigan* prepared by a grower who claims to have 35 years experience with blueberries. Included in his nearly two pages on pollination are several incorrect or misleading statements.

Bumble bees are mentioned as being good pollinators and there is no question that this is true. One of our eastern authorities on blueberry pollination said "on a bee-for-bee basis bumble bees are about ten times as effective as honeybees at pollinating blueberries." However, at the time the blueberries are in flower the bumble bee colonies are still too small to have many workers in the field and many have queens only. When one is thinking of pollinating a large acreage it is only practical to use honeybees. Field observations indicate that bumble bees prefer to visit certain blueberry varieties over others. I understand the Michigan Blueberry Growers Association advises the use of two colonies of honeybees per acre, a fact that the paper in question fails to mention.

It is suggested that the use of "air sprayers" for pollination should be investigated. The truth is that the blueberry flower is well adapted to insect pollination. The sexual parts of the flower are so placed that a bee or other insect reaching to the flower's base to obtain nectar spreads pollen onto the female flower parts with no difficulty. I don't know why we often find people recommending air blast sprayers or some similar piece of equipment to spread pollen on a plant so neatly designed through years of evolution for pollination by insects. There are insect pollinated plants and there are wind pollinated plants, and it is well to remember how differently they usually are in structure.

Still another problem that bothers me about this Michigan paper is the author's reluctance to accept the results of pollination experiments on plants confined in cages with and without bees. This is a standard technique for studying the pollination requirements of many plants. I don't believe the author's criticism of this technique is valid. Dorr and Martin (1966), who did much practical work on blueberry pollination, used cages to good advantage. Martin's paper is one of the best available and should be in the hands of every grower and beekeepers involved in blueberry production.

Another important question is that of self-fertility. There appears to be no question among those I've talked to, and from what I have read, that many blueberry varieties are self-fertile. However, it has been demonstrated repeatedly that without cross pollination (which is provided by insects) the berries are small and slow to ripen.

We have two excellent textbooks on pollination and I recommend that every beekeeper have one or both on hand to answer questions or to deal with some of the misinformation about pollination that seems to crop up frequently. The book by Free is quite expensive but McGregor's is readily available, low in cost, and covers the U.S. pollination problems especially well.

Dorr, J. and Martin, E.C. Pollination studies on the highbush blueberry. Quarterly Bulletin of the Michigan Agricultural Experiment Station. 48: 437-48. 1966.

Dickerson, H.C. Notes on blueberry production in Michigan. Mimeographed by the author. 17 pages. March 1980.

McGregor, S.E. Insect pollination of cultivated crop plants. USDA Agricultural Research Service, Agricultural Handbook No. 496. 411 pages. 1976. (Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402 for $12.00).

Free, J.B. Insect pollination of crops. Academic Press, New York. 544 pages. 1970. (Available from International Bee Research Assoc., Hill House, Gerrards Cross, Bucks, England SL9 ONR for $77.30).

Literature on the Honeybee

More has been written on the honeybee than about any other insect or most animals. What continues to impress me is the great volume of papers, books and journals that appear. The library of the International Bee Research Association, based in London, reports that in 1981 they received 950 new papers and 125 periodicals all relating to honeybees. I'm sure not all this represents new material or ideas.

The reason I write this is to emphasize that there is no shortage of published information on bees. Furthermore, literature is available in a great variety of languages. The IBRA library has branches in Poona (India) and Nairobi (Kenya) and a new branch is being opened in Tokyo (Japan).

In the United States there are many excellent libraries on bees. One of the finest is part of the National Agricultural Library in Beltsville, Maryland. Books, papers and journals can be borrowed on interlibrary loan from most of these, through any local library.□

Thin layer chromatography of sugars in thoraces of honeybees showed that well-fed bees from laboratory colonies contained twice as much glucose as those poisoned by insecticides, while starved bees had much smaller amounts of glucose than either of the above.

From *Journal of Apicultural Research* (1981). Greenway; Smart; Simpson; Smith; Stevenson. Apicultural A.B.S., Vol. 33, No. 2, 1982.

Bee Talk

By RICHARD TAYLOR
Route #3
Trumansburg, NY 14886

I'VE JUST BEEN fitting up some supers, with rings and foundation, to catch the tail end of the crop and get a few unfinished sections completed. Some of these old supers I'm using have a twenty-five year accumulation of propolis in them, but this suits me fine, and I think the bees like them that way too. They must feel right at home when they go up into a super like that. Some of these supers I bought directly from the late Dr. Zbikowski, inventor of the circular sections, back in the fifties, and all the frames I got from him then are still in use. So that was a pretty good buy. And of course those old supers are as filled with memories for me as they are with bee glue. I love the scent of propolis so much that I keep a chunk on my desk, and I smell it every once in awhile. It takes me back over the years. Way back then I used to keep notebooks. During the bee season I would write down all my mistakes, to make sure I didn't make them again. In the winter I wrote down all my brilliant ideas to try out the next year. The note books got awfully full, but I certainly learned a lot that way. I probably should not have stopped my note books, because I'm sure I still make mistakes. I guess I'm just too set in my ways now to want to admit it.

That doesn't have much to do with what I want to talk about this time, however. I want to talk about selling honey. I don't think I've said anything about that for quite awhile. I'm going to have to do some hustling myself, because I have a good crop, and the season is not quite over yet. For the first time in years I got a lot of black locust honey, which must be the lightest and mildest honey in the world. The supers just filled right up with it, with hardly a single unfinished section. "Black locust" is, for the beekeeper, an unfortunate name, because it makes a negative impression on customers. You have to explain to them that it really is very nice honey. Beekeepers and sometimes even experts, sometimes confuse it with the honey locust tree, which is a different species altogether, and not a very good honey plant, in spite of its name. The black locust flow was followed by a brief basswood flow, then a strong flow from the sumacs. All made perfectly beautiful comb honey, so now I've got to get hopping and get it sold.

My main outlet is my honey stand, operated on the honor system. I don't think anyone stole from me last summer. I've got a sign in it, which they can't miss, which says, "Thou shalt not steal." Hardly anyone would want to anyway. And besides, I'm usually not too far away, so I can sort of keep an eye on the comings and goings, and size people up. I sell a lot of honey that way. You need big signs up and down the road. A lot of my customers are tourists, on the lookout for something to buy and take home. Comb honey fits the bill perfectly. A lot of people don't know what it is, and many of those who do have never seen it in round sections. They pick one up, out of curiosity, and it is just so beautiful that they can hardly resist buying it. So many people are puzzled by comb honey, however, that I typed up a brief explanation and had several hundred copies made. I leave a little pile of these on the stand, right next to the money box, and people seem to think it answers their questions just right. Any reader who can use such a description is free to copy it off, to help promote his own sales.

I've noticed that quite a few sideline beekeepers sell their crops at their place of work, which is an excellent idea. People know who produced the honey and they know it is all right. Besides, people enjoy being customers of their friends. It gives them something to talk about, and strengthens the bonds of friendship.

Of course keeping bees is fun, just because they are so interesting, but I find it greatly adds to the zest of it all to have a nice income from them too. If you're a sideliner like me, you don't get rich keeping bees, but you do get the best price for your honey, eliminating the middleman. It is a most pleasant way to earn some extra money. And when you see the prices of everything going up all the time, you feel a little less victimized if, instead of being always the buyer, you are sometimes the seller. That is a morale booster in discouraging times.□

What is Comb Honey?

It is the only sweet in the world that is neither made nor processed by man. The bees build their delicate comb, and fill it with honey, in the very container you purchase.

Honey that has been extracted from the honey comb and strained is not the same. Usually it has been heated, to retard granulation. If it is commercially packed, then it has been heated and filtered as well. It is good, but not as good as comb honey, the most exquisite delicacy to be found anyplace in nature.

Put comb honey on anything you wish to sweeten, or eat it as is. The wax won't hurt you; in fact, though it has little nutritional value, it is good for you in other ways. It is your guarantee that the honey mingled with it is the perfection of what honey should be.

R. T.

To use: Remove covers, top and bottom, run a knife around inner edge of container to let honey comb drop out onto a dish.

The 10th Pollination Conference

By LARRY GOLTZ
Medina, Ohio

PERIODICALLY, A pollination conference is sponsored by beekeeping organizations, government agencies and other groups associated with the beekeeping industry. The 1982 conference was held at Carbondale, Illinois at Southern Illinois University on July 8th, 9th and 10th. It was sponsored by the American Beekeeping Federation, Inc., Arch Minerals Corporation, the Illinois Beekeepers Association, The Illinois Department of Agriculture and the United States Department of Agriculture. A total of about sixty participants came from a number of states and one from Israel. Speakers presented reports on a number of subjects relating to honeybee and other insect pollinators. Coverage of the conference was by the three national bee journals and local newspapers. The meetings were held in the spacious, modern Student Center, a hall which also contained the dining facilities for the conference participants. Housing was a residence hall within walking distance of the Student Center.

A welcome from the representative of the President and Chancellor of Southern Illinois University opened the conference. A response and an outline of the conference theme was given by Binford Weaver, President of the American Beekeeping Federation. The 1982 American Honey Princess Kim Menzel of North Dakota was introduced. In respect for the major contribution made by Arch Minerals to the arrangement of the Conference, a portion of the opening day's program was allocated to a description of the major effort being made by the coal mining company to restore the mined areas to full productivity. The slide-lecture illustrated the various steps taken to restore the mined land, sometimes to a better state of fertility than nearby control plots which had not had the coal removed. Robert Holloway, Director of Reclamation of Arch Mineral, provided the information and continued as able host during the following day's tour of the Captain Mine.

Dr. Marshall D. Levin, acting area director, western area ARS/USDA, Fresno, CA, discussed the future of commercial pollination.

Dr. Gerald Loper, Res. Leader, Carl Hayden Research Center, ARS/USDA Tucson, AZ, spoke about hybrid cotton seed production.

Since environmental concerns are very much on the minds of industry and agriculture it was appropriate that discussion should center around such ecologically significant subjects as honeybees and other insect pollinators, field crop pollination, pollination ecology, soil, water and air pollution, soil restoration and the plant sciences.

Dr. Everett Oertel, Collaborator, Bee Breeding Lab, ARS/USDA, Baton Rouge, LA, addressed the conference about our changing nectar and pollen resources.

Dr. David Robacher, a reseach scientist and Dr. Eric Erickson, research leader at the U.S.D.A. laboratory in Madison, Wisconsin provided a wealth of information on soybean pollination. Soybeans exude three chemicals which attract insect pollinators, although the exact role of the honeybee in contributing to soybean pollination is still being studied. An exact evaluation is difficult since such diverse factors as soybean variety, soil, moisture supply and other climatic and geographical conditions make an analysis difficult. One of the amazing concepts illustrated by soybean-honeybee relationships is the periodicity of honeybee visits to soybean flowers. Bees, apparently flying in response to a sense of timing tuned specifically to the nectar yield of the soybean flower, will regulate their visits to coincide with the rhythm of high and low nectar secretion periods during the day. Honeybees also exhibit selectivity among soybean varieties, learning to ignore those plants which do not produce nectar, have nectar of low value or are cleistogamous, having small unopened flowers generally self-pollinated. In some commercially available soybean varieties such as Mitchell there may be over a 10% increase in yield from good bee pollination.

Soybeans are only one of the several field crops which are being in-

tensely studied by pollination scientists. Garden vegetable crops are also wholly or partially dependent upon bee pollination for the production of the seed needed to grow the produce in home and commercial gardens. Carrots are one. For about ten years plant breeders have been working on hybrid carrot see production. One of the most puzzling aspects has been the honeybee's peculiar foraging habits among the carrot cultivars. Bees will not forage on certain male or female plants, frustrating efforts to make predicatable crosses among desirable lines, necessary in hybrid seed development. The same situation exists to various degrees among other crops during hybrid research such as with sunflowers and cotton. Sometimes plant breeders must resort to hand pollination, a very tedious and usually economically unacceptable method of cross pollination. Various other techniques of plant manipulation supplement the mechanics of pollination during the development process in hybrid seed growing. Among them are sexual expression, as in cucumbers, incompatibility, male sterility and genetic alteration. The principal system followed by plant breeders is referred to as cytoplasmic, a condition in which the celluar development of the plant, influenced by chemical regulators, has the end result of preventing the release of pollen on the male line, or male sterility. Plant breeders have also achieved male sterility by breeding plants with a deterioration of male structural parts. The final conclusion, voiced by Dr. Erickson, is that many problems have prevented the marketing of hybrid carrot seed.

In the same vein, the production of hybrid sunflower seed was discussed by Mark Sugden of the University of Minnesota, substituting for Dr. Basil Furgala. In the 1970's hybrid sunflowers were introduced and now make up nearly 100% of the seed marketed. The row planting of inbred lines of sunflowers for hybrid seed production varies according to individual growers but are usually made to take best advantage of the pollinating habits of the honeybees. In test plots in Minnesota two R (male) line rows are interspersed with fourteen A (female) line rows. Sunflower hybrid seed production records show consistantly high marks for the performance of the honeybee. One of their most valuable traits is their flower consistancy — they forage almost exclusively on either the A or the R line with a minimum of crossing over. The pollen gatherers stay on the R (male) plants

Much of the responsibility for the smooth running of the Conference was credited to these individuals: Left to right, Ms. Willow Ealy and Dr. Jeanne Bortz of the S.I.U., Division of Continuing Education; and Robert Holloway of Arch Mineral Corporation.

and the nectar gatherers are evenly distributed on the A (female) lines. This gives a good seed yield from the F1 male fertile generaltion. Hybrid sunflower seed planted 1.3 million acres of sunflowers in 1981. In seed growing one colony of bees is allocated to one-half acre; fifty bees are needed to visit each one hundred sunflower seed heads.

Cotton is another crop on which bees may prove that they can do a job of pollination. Dr. Loper, research leader of pollination research at Tucson, Arizona reviewed the status of hybrid cotton research in the hot climates of the Southwest. Such specific problems as insecticide use during hybrid seed growing, pollen dispersal, insect pollinator use and grower education are holding up hybrid cotton seed development. In early experiments by Moffatt in Texas some of the first concepts of using bee pollinator units were worked out. If hybrid cotton is to become a reality 750,000 to one million colonies of bees will be needed. This compares with the 600,000 needed to pollinate a crop of almonds. Unfortunately, high temperatures associated with cotton growing affects bee pollination. In 1980 the value of hybrid cotton was in doubt, but in 1981 and in 1982 improvements of up to 40 % in yield are being noted. Some extraordinary problems confront breeders attempting to grow quantities of hybrid cotton seed. Bee preferences are often an asset but in the case of cotton the foraging habits may work to the disadvantage of the seed grower. Cotton blossom color crosses, adequate pollen deposition on the stigma, spiny pollen grains and the attraction of extra floral nectaries are problems confronting growers using honeybees for pollination.

In a slightly different tact, Dr. Marshall Levin gave a report on the current status of pollination research in the U.S.D.A. He said that bee pollina-

Reclaimed strip mined land which now grows alfalfa (foreground) soybeans (middle) and corn (background). A mine machine is in background.

tion revenue alone will not support commercial beekeeping — there must be the added honey production. Few commercial beekeepers get as much as 50% of their income from pollination fees. Various predictions, he admitted, made in the past have not always come true. Needed changes in pollination research will have to come by way of selling the programs, by application to the problems, and improved communication. He said the beekeeping industry must press for more attention.

The effect of environmental pollution stress on pollinators was reviewed by Dr. Jerry Bromenshenk, a research scientist from Missoula, Montana. Although lower levels of pollutants are barely measureable in pollen in the laboratory the evidence that such exists in nature may be reflected in abnormal plant reactions such as poor pollen release, low pollen viability and the effects of contaminated pollen on insect pollinators. Excessive amounts of sulfur, nitrogen, flourine and arsenic compounds in soil, air and water may contribute to honeybee stress, thereby affecting foraging, brood rearing, temper and longevity. Dr. Bromenshenk has investigated bees and bee products near areas in which parts per million measurment of environmental contamination may be expected to be higher than normal. His conclusion: Pollution does affect pollination.

Dr. Frank Parker of the Logan, Utah research station digressed somewhat from the role of the honeybee when he talked about non-apis pollinators such as the alkali bee, alfalfa leaf cutter bee, sunflower leaf cutter bee, horn orchard bee, ground nesting bees and certain insects specific to the cucubits. The advantages claimed for non-apis pollinators are: They are crop specialists, their habits can be syncronized with crop bloom; they can pollinate areas limited in size; and the numbers of females required is small, less than 200 females per acre on apples and approximately 2,000 per acre for alfalfa. the principal disadvantages are: They are hard to procure by the grower; they are costly; and their nests are hard to protect.

An interesting insight on the flora of his country was presented to the conference by Dr. Daniel Eisikowitch of Tel Aviv Unversity, Israel. He showed slides and named a number of species of eucalyptus of interest to beekeepers in Israel.

Dr. Everett Oertel, cooperator at the U.S.D.A. lab in Baton Rouge, Louisiana told us that changes in American agriculture has not always been beneficial to beekeepers. Citing figures which are symptomatic of the discouraging trends in cropping practices he concluded that our changing nectar and pollen sources are at least partly responsible for the decline in the number of bee colonies in the United States from 5,500,000 in 1955 to 4,140,000 in 1980. For those personally acquainted with Dr. Oertel, you will be pleased to hear that our good friend (an octogenarian, I was told but find it hard to believe) is as lively as usual.

This giant power shovel (center, background) removes soil and rock to expose the coal at the Arch Mineral Mine.

On Saturday morning the presentations covered such diverse topics as pollination and wildlife, by Dr. Frank Robinson of the University of Florida; an impressive slide talk on plant succession in phosphate-mined areas in Florida, by Alan Bolton; and a review of the soil and plants in coal strip mine areas by Dr. Joe Jones and Dr. Ivan Jensen.

Alan Bolton described the conditions associated with reclaiming the land from which phosphate rock has been removed in Florida. He said that greater areas may have to be dealt with in the future as poorer deposits are worked. Reforestation is the usual vegetative cover restored to mined areas. Fifteen years may be needed to restore the land with the prospect of 30 years required for four seres of plant growth before reforestation is mature. In coal strip mined land the goal is to have a crop planted on the restored soil the season following the year it is mined. Land reforestation in the mined areas of Flordia present some unique and formidable problems. The disposal of waste gypsum, the low nutritional state of the sand tailings and the presence of retaining ponds which hold a soupy, clay slime hinder restoration here.

A considerably different environment was shown in the slides of Dr. Al Dietz of the University of Georgia, Athens, Georgia. Honeybees are maintained by the University in the coastal marshes and along the coastal beaches of the Atlantic Coast. The bees are showing a remarkable ability to forage for nectar and pollen among the beach vegtation, particularly the beach grasses, mainly sea oats, and also serve as valuable pollinators.

The information presented Saturday morning by Dr. Joe Jones and Dr. Ivan Jensen on strip mine reclamation were particularly apropos following the Friday tour of the Captain mine where we were taken by buses down into the open mine and through the reclaimed land. Flourishing stands of corn and soybeans and plots of grapes and fruit trees attested to the renewal of the land following the removal of the coal. Lying under about one hundred feet of soil and rock, the two layers of coal are mined. This entails first removing the topsoil, about a twelve inch layer, and stockpiling it for later spreading. Giant power shovels and a specially designed machine with a revolving wheel scoop away the overburden of soil, layer by layer. Large conveyers move the soil into towering banks behind the open pit, exposing the coal. After the coal is removed from the trench the mighty task of replacing the soil begins, loose rocks being removed in the process. Soil and crop specialists are studying various soil

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Honey Apple Wine – A Convivial Delight

By STEPHEN BURT
Roseville, MI

MAKING WINE FROM honey is an exciting possibility for the beekeeper. The making of honey wine sounds complicated, so it would hardly be surprising if a person felt reluctant to risk large sums of either honey or money to be used in an unfamiliar or uncertain process. The following paper will discuss how to make a very palatable wine at low cost, using a minimum of equipment and very fundamental wine making procedures.

Most recipes for honey wines, commonly known as "meads," are a discouragement to the natural foods advocate in their reliance upon chemical additives, such as urea, phosphates, and other compounds, to nourish the growing yeasts and clarify the final product. "The wine remembers," as a major California vintner proclaims in his advertising. This major drawback to honey wine making can be avoided almost completely through the use of various blends of pure fruit juice mixed with diluted honey, with the aim of producing a mixture of fluid having a dissolved sugar content greater than a twenty-one percent. Such a sweet fluid, commonly known at this point in the wine making process as a "must," will readily develop into wine following inoculation with living yeast.

Through the use of pure, pasteurized apple juice (sweet cider) combined with a diluted honey, a wine can be produced quite readily, with an absolute minimum of additives or fuss. The apple cider does not have sufficient sugar to produce a sound wine, but it does have sufficient vitamins, minerals, and acids to nourish a thriving yeast culture. A mixture of about eight parts pure sweet cider, five parts water, and three parts pure honey should yield a reasonably well-balanced must, capable of producing a healthy, well-balanced wine. With the investment of about five dollars, the wine maker can purchase a hydrometer, an instrument which measures the specific gravity of any liquid. By comparing the results of the hydrometer against a simple-to-read-scale, it is possible to gauge the exact ratio of dissolved sugar in the must. The suggested blend of eight parts cider, five parts water, and three parts honey will form a must having about twenty-six percent dissolved sugar. A must beginning with twenty-one percent sugar will produce a healthy, but very dry wine, while one as high as thirty percent sugar gives rise to a very sweet and highly alcoholic wine, with intermediate values producing semi-dry to semi-sweet wines. Correct use of the hydrometer insures both the health of the wine and, to a large degree, the actual type and character. The purchase and use of the hydrometer are most highly recommended.

"As in beekeeping or honey processing, honey wine making is a highly individualistic pursuit."

Further possible steps in the preparation of the must are the inclusion of sulfur dioxide to remove microorganisms and the addition of acid to the must. Whether or not to add additional acid to the must is significant to the commercial wine maker, who by necessity has to produce a product of constant character and quality. For the home wine maker the use of additional acid is a matter of taste and a precautionary measure. Possible acids available to the wine maker are tartaric (naturally found in grapes,) malic (naturally found in apples,) or citric (naturally found in citrus fruits.) In my wine making, I add one fourth teaspoon of citric acied to each gallon of must. This use of acid improves the flavor of the wine while making it more resistant to invasion by bacteria. At this point the must has been mixed in a large crock, the cider having been poured in cold while the water and honey have been added after being gently boiled. After the must has been prepared, the wine maker should examine the question of whether or not to sterilize the mixture prior to the introduction of any of several types of yeast. Personally, I was loath to add anything artificial to my wines, but several instances where the native microorganisms ruined the must convinced this wine maker that sterilizing the must with sulfur dioxide was essential. I add one Camden Tablet for each gallon of must in accordance with the manufacturer's instructions. One day later I syphon the must into a suitably large, sterilized glass container. A packet of dried brewer's yeast is added, and the vessel is closed forthwith.

The home wine maker can seal the wine during the fermentation process by wrapping sandwich wrap about the neck of the bottle with a rubber band. I highly recommend the purchase of a fermentation lock, an expense of but a few dollars. This device uses two columns of water to permit and display the escape of carbon dioxide,a natural bi-product of fermentation, while reliably excluding dirt and bacteria. Of real importance, the wine maker can gauge the progress of the fermentation by merely observing the rate and force with which the bubbles pass through the lock.

The selection of a brewer's yeast affords the home wine maker considerable room for variation of the final product. In my local wine maker supply shop, the proprietor offers Montrachet, Champagne, Liebfraumilch, and several beer-type cultures. In a locality without a hardware store, grocer, or shopkeeper willing to stock wine making supplies, the procurement of yeast cultures or other supplies might be quite a challenge. If no local source of wine making supplies exists, you might request the mail order catalog from the following concern: **Wine Unlimited, 415 E. 4th St., Royal Oak, MI 48067.**

The actual fermentation proceeds quite violently in this honey-apple blend. After but a few weeks, a new wine will have arisen in the container in which it has been fermenting. To perfect this crude, essentially raw product, a few serious obstacles yet remain. The wine needs to age and to clarify, processes which proceed simultaneously. To improve the developing flavor of the wine, it is necessary to separate the new wine from the accumulation of dead yeast cells now collected on the bottom of the vessel. For the home wine maker, simply transferring the wine with a syphon into the final, sterilized bottles may be all that is necessary. The wine will clear and mellow while a modest sediment collects at the bottom of the bottle. By transferring from one large vessel to another several times over a period of months, a pro-

A Better Year

By DENNIS DECHANT
Gaffney, SC

AFTER THE DISASTROUS drought of 1981 that hit our area as well as others, I was beginning to have my doubts as to whether my colonies would even survive the winter. The normally strong tulip poplar flow that begins the last of April and continues through May, didn't develop. Then June was very dry, so the minor nectar flow that makes up the rest of our main honey season was off. By the time August 31st arrived, I was starting to make plans to feed or unite my colonies — whichever the need.

The first week in September I began checking my colonies for strength and stores. I noticed that all but one or two were extremely strong, and what surprised and pleased me the most was the store situation, which only a month or so earlier was leaving me with doubts. I had noticed during my travels around my community that the goldenrod had a good bloom and the asters were blooming a little earlier. I could only hope by some chance they were going to give a normal flow. I decided to put off any feeding for two more weeks and hope. That decision proved to save me money on sugar.

By the first frost my colonies went into winter the way I like them to in this part of South Carolina — strong, healthy, and in 1½ story hives with plenty of food. Now, if only spring cooperates!

Spring of 1982 came in like a lamb but was soon to change. In January I began checking my colonies. All was O.K. for stores, so I would wait till the middle of March after the red maple bloom and warmer weather, to check them more thoroughly.

Towards the end of March, we had a warm spell so I checked them and found two needing to be fed to supplement the wild plum flow that was beginning, and one that had to be united because of a queenless condition. Then visions of 1981 returned when colder weather and a couple of late freezes brought the wild plum and wild cherry flows to an end. Brood rearing was well under way and that meant possible starvation.

I kept close watch on my bees during this period until May, when to my relief, the tulip poplar bloom began. With the spring showers we had, the flow looked promising. As I began putting on the supers, first one, then another and watched my winged friends fill them up, the worries shifted from me to my wife, who was beginning to have nightmares about the jars she would have to wash. When I began bottling the first of the 1982 honey crop, it was soon obvious that it would truly be . . . a better year!

Honey Apple Wine — A Convivial Delight

cess known as "racking the wine," a beautifully clear, sediment-free wine can ultimately be bottled. You may choose to employ ordinary screw-cap wine bottles, or may elect to use hand-corking, custom labelled beauties, costing altogether as much empty from the wine supply dealer as the ordinary sort do at the super market with contents included. Immediately upon completion of the fermentation process, honey-apple wine posesses an inviting, fruity bouquet. Aging the wine decidedly mellows the flavor, while removing that subtle harshness frequently present in a new wine. After several months, the wine becomes progressively more palatable, with a uniquely delicious taste unlike any grape wine.

A suitable container to ferment the wine in may be nothing more than the glass, one-gallon jug in which apple cider is normally sold. To efficiently produce a more practical quantity of wine, either a large glass carboy or plastic fermentation vat may be purchased. For about twelve dollars, I acquired an immense, five-gallon glass carboy, which was designed to accomodate a fermentation lock. Although the equipment and materials represented something of an expense, the first vintage more than repaid every cost of production. Prior to the purchase of the carbody, I often had one or more gallon jugs perking away on my counter. From the practical point of view, a gallon of wine is scarcely enough to bottle, let alone age, or rack from container to container.

As in beekeeping or honey processing, honey wine making is a highly individualistic pursuit. The reader will note that no particular formula for sweet, semi-dry, or dry wine was advised. Nor was one type of veast recommended in preference to any other. My purpose in writing this paper was not to provide the last word on the subject, but to provide the first word of encouragement for those who have yet to consider or attempt such a project. My hope is that the reader will explore honey wine making, if only initially for the educational value of the experience. Quite possibly the first sample of wine made from honey will make honey wine making a logical extension of the interest we all share in the honeybee.

An Annotated Bibliography Of Honey Wine Making

Morse, Roger A., *Making Mead (Honey Wine)*, Wicwas Press, Ithaca, New York, 1980. An excellent discussion of the history of mead and the essentials of its production, including a thorough discussion of needed equipment and step-by-step directions.

Auf Der Heide, Ralph, *The Illustrated Wine Making Book*, Dolphin Books, Garden City, New York, 1973. An in depth introduction to the essentials of home wine making, with four pages devoted to the making of honey wines (p. 119-123).

Root, A. I. , *ABC and XYZ of Bee Culture*, A. I. Root Co., Medina, Ohio 1978. This encyclopedia of bee culture introduces the subject of honey wines, with several pages devoted to recipes and directions (p. 442-443).

Weaver, Robert, *Grape Growing*, John Wiley & Son, New York, 1976. A classic book on grape culture, its final chapter, devoted to home wine making, is very detailed in its descriptions of yeast biology, equipment, and overall wine making procedures.

Morse, Roger A., *The Complete Guide to Beekeeping*, E. P. Dutton & Co., New York, 1974. A valuable and readable book on bee culture, its final chapter is concerned with an in depth introduction to the subject of honey wine making, complete with concise directions and recipes.

Parkhill, Joe, *The Wonderful World of Honey*, Cookbook Publishers Inc., Leana, Kansas, 1977. A favorite text on honey cookery — and one where each recipe is utterly delicious — delves into honey wines in its honey beverage chapter, including such headings as "Auld English Mead," and "Queen Elizabeth's Methaglin," (p. 59-61).

Southern Package Bees Arrive In Nova Scotia

By ANNE HUTTEN
Kentville, N. S., Canada

SOME OF FLORIDA'S beekeepers will have had personal contact with their counterparts in Nova Scotia, Canada, on occasions when the latter traveled down to collect their spring supply of package bees. For example, George Foote of Woodville, N.S. has often driven down to the J. M. Cutts operation at Chipley, Florida, staying overnight before heading back for the long, non-stop haul home. Eric Nickerson of Waterville, N.S. and Eddie McPhee of West Gore, N.S. are two others who have done the same.

This year, rising fuel costs have kept the Nova Scotians at home. Instead of making the trip personally, they have obtained their package bees through F. W. Jones & Sons of Bedford, Quebec. This supplier of bees and related equipment made three trips from Florida and Georgia to Nova Scotia. One particular trip included dropoffs at the Experimental Station in Nappan, N.S., at Truro's Agricultural College, Frank Woolaver's farm at Brooklyn, and at George Foote's farm.

The Foote Family Farm delivery amounted to about one-third of the entire load, and was intended for twenty beekeepers in the western end of the province. Most of them came to collect their bees shortly after the truck had arrived. Between the people and the bees, the place was busier than the inside of any hive.

Nova Scotia's 660 beekeepers range from hobbyists keeping one hive in a city backyard to the Foote's seven hundred hives, or Al Feming of Colchester County who keeps roughly the same number. The 1981 crop averaged about 85 pounds to the hive, while some did considerably better than that. Prices have been stable, partly due to regular discussions between members of the N. S. Beekeepers' Association, headed this year by Eric Nickerson. A Maritime Beekeepers' Tour also keeps bee people in touch with each other and with market conditions.

Only two thousand hives were overwintered in the province. The long, cold winter makes the economics of overwintering uncertain, since the cost of sugar syrup, medication, labor and hive insulation just about equals the cost of package bees. However, new techniques are being tried on an ongoing basis, spurred especially by such leaders as Endel Karmo, retired provincial apiarist. Karmo has been bunching his hives into what he calls

George Foote unloads a shipment of package bees from Georgia.

apartment houses to keep the heat in. A sheltered location is essential, with natural or man-made windbreaks close at hand.

Whether using package bees or overwintered hives, the province's beekeepers usually continue feeding sugar syrup until the middle of May. By then, pollen is widely available from alders, and the first wildflowers provide nectar. Some disease problems exist. Nosema is commonly treated with Fumidil-B®; the foulbroods with Terramycin.

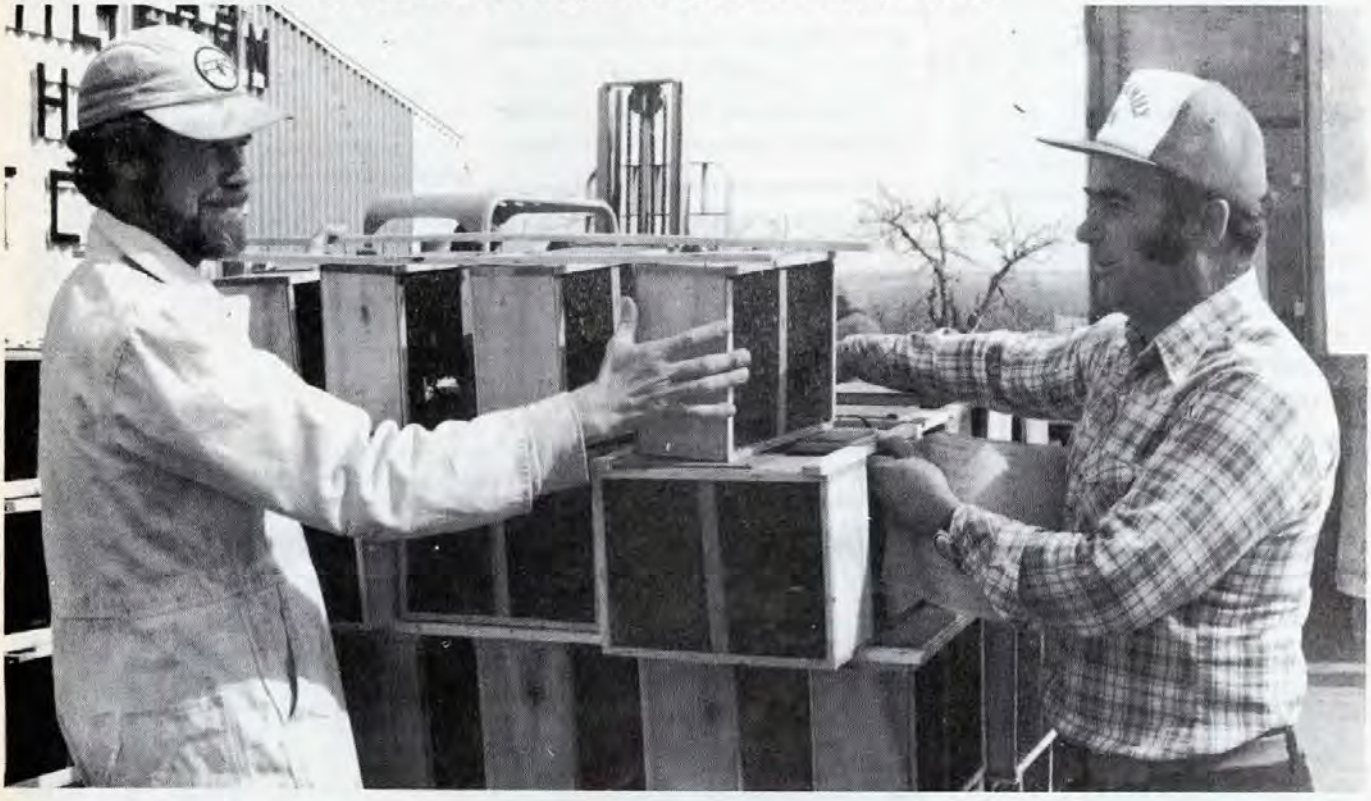
Beekeepers recently approached provincial government for help in such areas as raising replacement queens, research in overwintering, and disease control. It is hoped that the Nova Scotia Agricultural College will include a course in beekeeping when it becomes a four year degree granting institution.

"We do need qualified fieldworkers and researchers," says George Foote, "and we've had to get them from outside until now." The province has predicted a fifty percent increase in the industry within the next decade, but Foote notes that beekeepers had better get together on the marketing end of things if this is to happen.. There's plenty of demand for honey, but most beekeepers have no facilities for storing their product, placing stress on the markets in fall. Only a few operators, such as Foote, are able to supply their buyers throughout the year.

Foote Family Farm is also the Nova Scotia distributor for F. W. Jones bee supplies, including parts for the hive, protective clothing for beekeepers, containers for honey, smokers and hive tools.

For southern beekeepers shipping packages up north, it may be interesting to know what Nova Scotia's beekeepers pay for their "livestock." The 1982 price list sent out by Lorne Crozier, provincial apiarist, gives a range of $25.20 to $28.25 (Can.$) for two pound packages, while the three pound packages cost $33 to $37 depending on the shipper and time of arrival. Extra queens sell for five dollars (Can.) each.

Beekeeper Frank Hill of Port Williams, N.S. (L) gets his order from George Foote.



Honey Warning Label Denied

The Food and Drug Administration has denied the Center For Science in the Public Interest's petition requiring warning labels on honey containers which would have drawn attention to the product's potential for infant botulism in infants under one year of age.

In a letter to C.S.P.I., Joseph P. Hile, F.D.A.'s Associate Commissioner for regulatory affairs said, "Until more is known about the etiology of infant botulism, F.D.A. believes that it is inappropiate to single out honey as a specific product requiring a warning label." Hite continued, "There is general scientific consensus that if one looks long enough in non-steril foods that would be fed to infants C. botulinum spores probably would be found in most."

The Honey Industry Council had filed a response to the petition, vigorously opposing any such label special requirement. The petition to force the use of this label has therefore been denied according to a letter of Robert M. Rubenstein, Counsel for the Honey Industry Council of America, Inc., which confirms the report in the *Food Chemical News*.

The F.D.A. does join the Centers for Disease Control, The American Medical Association and the American Academy of Pediatrics in alerting the medical profession to the hazards of infant botulism, irrespective of the potential source of botulism spores" says Hile.

Comb and Cut Comb Honey Production

By ROGER A. MORSE
Department Of Entomology
Cornell University
Ithaca, NY 14853

THERE ARE SEVERAL reasons why a beekeeper might choose to produce honey in the comb. First and foremost, comb honey has a superior flavor; it contains no air, which is incorporated in extraction, and it does not lose the flavoring ingredients that may evaporate when honey is extracted. Also, a hobby beekeeper producing liquid honey must have access to an extractor. Extractors should be made only of stainless steel, as most other metals may contaminate honey. Plastic extractors have a short life. Unfortunately, stainless steel extractors are very expensive.

A compelling reason for making comb or cut comb honey is that it is one of the two greatest arts or challenges in beekeeping. Any beekeeper who can successfully grow queens or produce comb honey year after year has truly mastered beekeeping. I don't mean to suggest that producing liquid honey or package bees and growing colonies for pollination are easy tasks; however, I have yet to meet a beekeeper who won't admit that comb honey production taxes one's ability.

I have a good friend, a hobby beekeeper, who lives near Rochester, New York. He keeps one or two colonies of bees and produces only comb honey. He told me he sometimes has problems but really doesn't understand what all the fuss is about regarding the making of comb honey. He has done it for years — usually successfully. His case is interesting. He lives in the area that has the richest soil in our state. The land is sweet (high in lime). Clover is abundant, especially in the lawns of people who do not use weed killers. In such areas, with an abundance of honey plants, it is relatively easy to make comb honey and one need not pay close attention to the points discussed below. In our area we add lime to acid soil and sometimes fertilizer to encourage the dandelions and clover'.

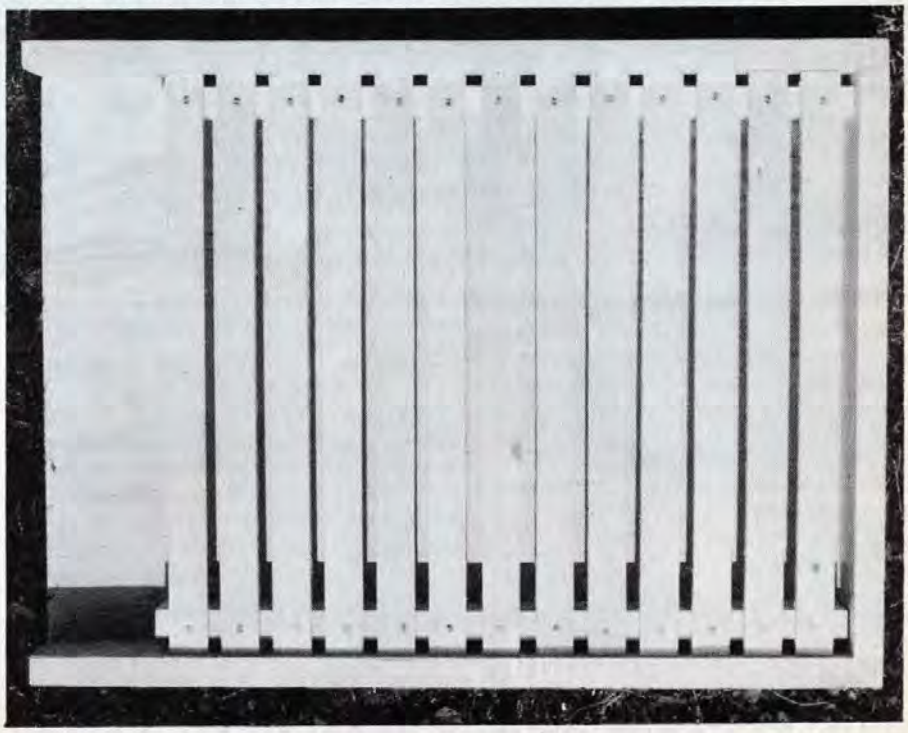
There are three types of comb honey. The easiest to produce is cut comb. This is made using shallow frames. When these are full the honey is cut into cakes of any desired size. These may be packaged in plastic boxes that are especially made for the purpose. A second type is produced in round sections, originally called Cobana sections, though more commonly called round sections. This is more difficult than the production of cut comb honey because there is poorer ventilation in a round section super than in a super of cut comb frames. Third, and most difficult to produce, are the old fashioned square or rectangular comb honey sections surrounded by wood. The wood is basswood, a soft fibrous wood that can be folded easily. Interestingly, the basswood tree is also a good source of nectar. The wood sections, because of their corners, are more difficult than round sections for bees to fill.

"Unfortunately, many people today, especially young people, have never eaten comb honey."

It is often written that one may produce comb honey by placing a section super on a colony that occupies two or three supers. In my experience, this works only about ten per cent of the time. To be successful in comb or cut comb honey production, one must crowd the colony of bees into a small space. Crowding causes congestion and congestion is a cause of swarm-

(Continued on page 522)

A Miller-type bottomboard. The bottom is made of plywood and the sides are two inches high. This greater depth gives better ventilation. The rack prevents the bees from building comb below the frames in the bottom super.



Projects A Small-Scale Operator Might Attempt (That a Commerical Operator Might Shun)

(Continued from page 485)

This effort is costly in terms of use of energy and consumption of food. It also makes the maintenance of a brood-raising temperature beneath the cluster difficult if not impossible. Wrapping helps to reduce the effect of wind upon the winter cluster. This is an additional reason for keeping entrances and ventilation exits for moisture a small as is feasible.

Part II, In October, will describe such projects as making up a nucleus, producing comb honey, establishing an out yard and avoiding swarming, all of which can be performed by the small scale operator in a different, though none the less interesting or effective manner, from the professional.

The 10th Pollination Conference

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compositions with the final test being the productivity of the various crops grown on the reclaimed land. Soil from the various layers are recombined in different ways. In some instances the original top soil has been replaced while in other experimental plots various soil layers are experimentally mixed. Cover crops are planted on some fields, field crops on others. Fertilizer, manure and sludge are added in some places to evaluate their performance in the various soil combinations. In most cases the restored land is as level and as productive, perhaps even more so, than the soil in control plots from which the coal has not been removed.

Contrasting sharply with the reclaimed land were the areas that had been mined prior to the reclamation laws of the 1970's. The topography showed the remains of largely unaltered spoil banks left after the layers of coal had been removed. Large, loose rocks remained and the land was poorly drained. All was not wasteland as trees had been planted, some natural growth had occured and wildlife flourished on the land, part of which is open for public use.

The last stop on the tour was for lunch at an excellent golf course built on mine property. As a fine, hot lunch was placed on the tables a heavy wind and rain storm struck, but the tent held and everything worked out despite some dampened tourists, though not in spirit.

Bees are kept on the reclaimed areas and are tended by Bob Holloway who has exhibited some prize winning comb honey harvested from the hives.

The day's tour was followed by a banquet in the evening.

Participants at the 10th pollination conference were treated royally by the host University, Bob Holloway and the Arch Mineral personnel, the sponsoring beekeeping associations and the government agencies. The program was excellent and the participants left knowing that they had experienced one of the best assemblies of 1982. □

Wisconsin Pesticide Regulations

New pesticide regulations have taken effect in Wisconsin as of 1 April, 1982, according to Dale Marsden, Sec.-Treas. of the Dane Co. Beekeepers Association. These codes do not include indemnity payments as in the past but place the responsibility for bee losses on the landowners and beekeepers. It also puts the responsibility for the safe and correct use of pesticides on the applicator, and assures the prudent beekeeper that he will be informed of pesticide applications with enough time to take some action. The Wisconsin Department of Agriculture has assured us that they will take appropriate action against code violators and provide the beekeeper with evidence to use to recover his loss from the applicator. This still requires that the beekeeper is responsible for the protection of his bees when notified that spraying will take place; in the past most beekeepers were not notified. For more information call the Wisconsin Dept. of Agriculture, Trade and Consumer Protection offices 608-266-2295.

Comb and Cut Comb Honey Production

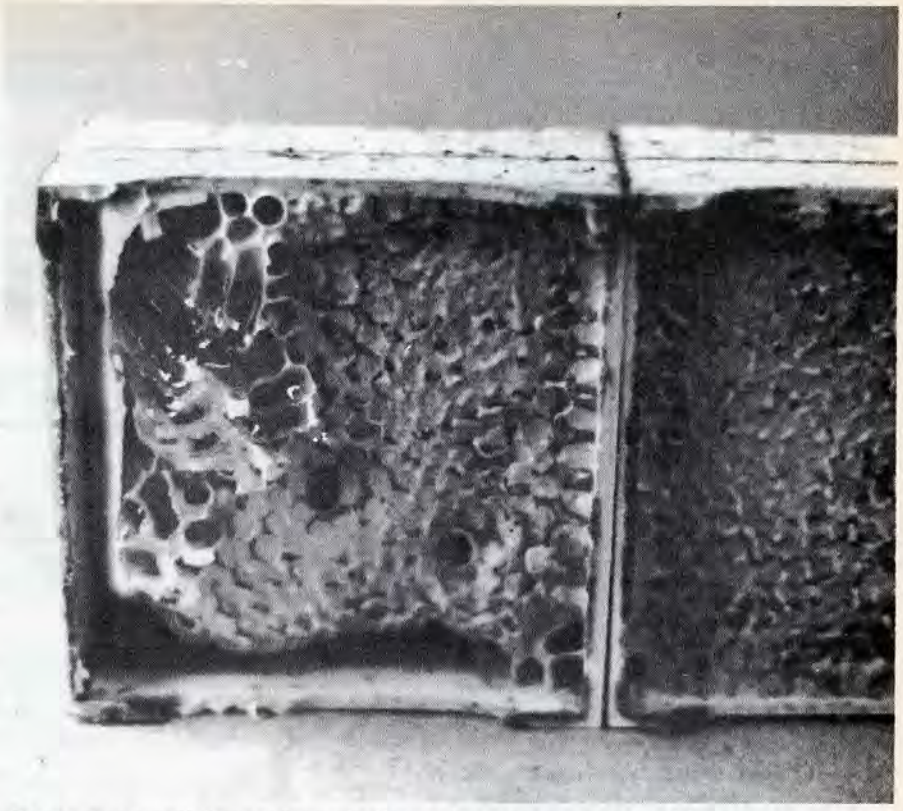
(Continued from page 520)

ing. Swarming takes bees away from the colony and without a full foraging force one cannot produce a crop of honey. The art in comb honey production includes congesting the colony while using techniques that will prevent swarming.

Preparing the Colony

To produce comb honey one allows a colony to grow into four or five standard, full-depth supers in the spring. During this time the colony must not be allowed to become crowded (congested). One or two days **after** the honey flow starts the colony is reduced to one super. This is not an easy task. I like to use a Miller bottomboard for comb honey production. Miller[2] described his bottomboard as a box without a top and one end. It is two inches deep versus the normal bottomboard depth of three quarter inch. A rack in the Miller bottomboard prevents bees from building comb under the bottomboards of the frames in the brood chamber. The chief advantage of a deep bottomboard is that it gives the bees a place to cluster without giving them a place to build comb, and its wide entrance improves ventilation. Good ventilation of a beehive is helpfull in preventing swarming.

When I prepare a colony for comb honey production, I place a newly scraped super on the bottom board and place in it the frames of capped brood from the colony. I insist on finding the queen in a colony to be used for honey production and to make sure she looks normal and is carefully placed into the new brood nest super. There are several reasons for placing the capped brood in the super: this will be the first brood to emerge and contribute to the work force, primarily, at first, in secreting the wax needed for comb comstruction; capped brood does not require feeding and presumably this will free some bees for honey gathering; the rapid emergence of brood frees up cells for the queen to lay in and provides some relief in the otherwise congested colony. When the selected frames of brood are in the super, the remaining bees are shaken onto the ground in front of the colony. The extra supers and frames are given to other colonies. If the weather is warm weak colonies may be strengthened by adding extra brood, provided they are not too weak to care for it.



Producing comb honey is a challenge because so many things can go wrong as they did here. The foundation was not held in place and thus the distorted comb. The sections were in place too long and too much propolis was deposited on the wood.

Supering

Next, two supers of comb honey sections are placed on the colony. An excluder is not needed. If one is producing cut comb honey there may be a problem with the queen moving into, and laying eggs in, the cut comb honey frames. Still, cut comb honey producers do not care to use an excluder because it interferes with ventilation. Instead they often place a half-depth super, at least half full of honey, on the brood nest super with the new frames of foundation above. This extra super serves as an excluder. One small point is important — this half-depth super of drawn comb should not all be old dark comb because bees will sometimes chew off bits of old comb to aid in building new comb. Black specks on the surface of otherwise white comb would be objectionable.

After the colony is supered, put the cover into place and make certain there are no upper entrances. Bees are reluctant to store honey near an entrance. Also, sections near an entrance are likely to become travel stained by bees coming into the hive laden with pollen. When there is only a single lower entrance, the pollen foragers will deposit their loads near the brood nest and will not contaiminate the sections.

Checking for Queen Cells

The colony should need no further attention for one week. After that time all frames in the brood nest must be inspected for queen cells. If cells are found they should be cut out and that colony marked. A colony that contains queen cells on three successive one-week inspections will probably not be a good comb honey producer. In fact, at this stage, one should compare such a colony with others in the apiary and, if it is not doing well, remove the comb honey supers and convert it to a producer of liquid honey. Colonies with young queens are less likely to produce queen cells.

Adding Supers

If the honey flow is strong and long one may add more sections or cut comb supers. There is no objection to forcing a colony to produce both

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Smokers and Their Use

(Continued from page 490)

the empty hive body is filled with frames from the bad tempered colony. The I pick up the remainder of the hive with the bad tempered bees and move it 20-25 feet. Now, I don't have to contend with the flying bees who of course go to the new hive. Now I can carefully go through the balance of the frames slowly, frame by frame. Usually I find the queen by then. If I don't I carry the hive of bad tempered bees back to where it was before, after examining the street for clumps of bees that may contain the queen. If I still cannot find her I take the other hive body 20-25 feet away and give it a kick. The field bees will fly out, go back to the original location and again I look until I find her, without a lot of hassle from the bad tempered bees.

Does this method ever fail? Yes it has, a hand full of times over twenty odd years I have kept bees. In that event I put the hive back together with excluders between each hive body and come back in a week. The queen has to be in the hive body with eggs in it. Carry that hive body away 20-25 feet, place it on a bottom board. After giving it a kick to get the flyers to return to the original site, you find the queen.

Now, just to carry that a bit farther. I know an airline pilot who obviously must be rich. For his three hives he has a dozen excluders! A week before his replacement queens are due to arrive he puts excluders between every hive body. When the queens arrive he takes the hive bodies with the eggs (and queen) and sets them on a bottom board and adds a lid. Then he requeens what is left of each hive. When he has time in a week or two he kills the old queens and combines the set-aside hives with the original, and now requeened colonies, placing a single sheet of newspaper between. Finally, and this is critical to any successful requeening, between six and nine days later he checks what was the queenless portion of the hive for queen cells because in the twenty four hour period during which the bees are gnawing through the paper they are likely to have started queen cells. If they are not destroyed by either the bees or the beekeeper in all likelyhood the bees will supercede the new queen.

To recap: Try a spray bottle instead of a smoker. If you want to use a smoker light it right and make sure the smoke is cool. Try it on your wrist because hot smoke burns off wings. Use the smoker when checking for food supply, diseases, queen egg laying, but don't use smoke during requeening. Smoke makes the queen more difficult to find. Finally, make a plug of wood to fit your smoker nozzle. To extinguish the smoker put in the plug and lay the smoker on its side for fifteen minutes, in which time it cools. Reuse the charred contents of the smoker to relight the smoker next time. The charred material lights easily. Never dump even a competely extinguished smoker's ashes in an area where there is a danger of fire. Someone seeing the pile of ashes may assume that they were hot when the contents of your smoker were poured out which could deny you the use of an apiary location merely on the basis of suspected carelessness.□

Comb and Cut Comb Honey Production

(Continued from page 522)

comb and cut comb honey in a good honey flow. New supers are added when one of the two supers that were given the colony at the outset of the honey flow are full and the second one is half full. The new super is placed **under** the first two supers and immediately over the brood nest. In this position there will be the greatest number of young wax-secreting bees that will go to work to draw the new foundation. This also deters the queen from moving upward.

Harvesting Comb Honey

I like to harvest section supers using a bee escape. One must be careful not to use much smoke in removing comb honey supers; in fact, no smoke is probably best. Smoked bees may uncap cells to feed on honey. Also, bits of soot from a smoker may be deposited on the new comb surface, which gives it a bad appearance.

Storing and Selling Comb Honey

One should never attempt to produce any quantity of comb honey without being certain there is a ready market for it. Unfortunately, many people today, especially young people, have never eaten comb honey. I give out comb honey in my introductory class in beekeeping and am always interested that so many students don't know how to eat it. They don't know if they should chew and/or swallow the wax!

One of the greatest dangers in producing comb honey is that the sections can easily be ravaged by wax moths. No fumigant is currently approved for use in killing wax moths in comb honey. The favorite technique to rid sections of wax moths is to place them in a freezer where the cold will kill moths in all stages. A 24-hour treatment is ample but treated sections must be stored in such a way that they are protected against subsequent wax moth attack. Sealing treated comb honey sections in clear plastic bags will both protect them against wax moths and keep them from picking up moisture, but the seal must be tight.

Honey will pick up moisture at its surface if it is exposed to high humidity. In humid areas the only answer is to keep the comb in a freezer or to use a dehumidifier.

Comb honey usually has a short "life"; however, I have kept sections in a freezer for one or two years and have found they will retain most of their freshness. The chief problem with long storage at room temperature is that the honey may crystallize. The crystals are usually coarse and large crystals do not have the best flavor. Still, with all its problems, no product is as fine as a section of comb honey; considerable pains must be taken in making it, but the results can bring great satisfaction. □

An attractive cut comb honey pack. The product is visible, clearly labeled and protected.

1. People who sell grass seed, lawn fertilizer, and weed killers want green lawns. For these people weeds such as dandelions and clovers are taboo. For those of us who are beekeepers, a fine lawn is yellow with dandelions in early spring and white with short-growing clover in July. I invite beekeepers to look at the Dyce Laboratory lawn at Cornell University to see what I consider a perfect lawn.

2. Dr. C. C. Miller was a master comb honey producer who died in 1920. His last book, *Fifty Years Among The Bees*, published in 1915, was, in my opinion, the best book ever written on comb honey production. It was reprinted in 1980 and is available for $7.95 paperback and $12.50 hardcover from Molly Yes Press, R.D. #3, Box 70B, New Berlin, NY 13411.

Maine Bee Inspector Chosen

Nicholas W. Calderone of Dover-Foxcroft has been selected by the Department of Agriculture as Maine's first full time bee inspector. He replaces Paul Szott of Turner who has been serving as a part-time inspector for several years.

Mr. Calderone comes well qualified for the job, holding a Bachelors degree in Entomology from Ohio State University. In addition to his educational qualifications he was involved for several years with about 600 colonies owned by the college, doing experimentation and testing for diseases.

Mr. Calderone has a pretty full program but if you would like to have him schedule an inspection you have only to call him at 289-3891, or write to the Division of Plant Industries, Department of Agriculture, Augusta, Maine.

From *The Maine Bee Line.*

Obituaries

Professor Karl von Frisch

PROFESSOR KARL VON FRISCH, aged 96, died June 12, 1982.

Karl von Frisch was known the world over for his experiments involving the vision, chemical senses and language of the honeybees. Although many people may be unaware of most of the life of the honeybee the fact that they communicate by means of dances is relatively well known. This stands as one of the most important discoveries and a tribute to Professor von Frisch.

Dr. Karl von Frisch at the 22nd International Apicultural Congress in Munich, Germany in August of 1969, von Frisch is shown in the center of the photo. Dr. E. Gnadinger is presenting a certificate of award to von Frisch.

Karl von Frisch did not come to the study of the honeybee as a beekeeper. From his earliest youth he was interested in all living things. At home, aquariums and cages were soon overflowing with the creatures he collected. He came from a Viennese family of doctors and teachers. His father was a surgeon, but Karl turned to the study of zoology. His own doctoral thesis was on the subject of color adaptability of fish to the color of the bottom of the body of water in which they lived. Strangely, this led him to the study of the world of bees. An assertion that fish were color blind led von Frisch to refute this by experiments and brought him to do the same with bees.

In 1912 he set up a small colony of bees and began his famous color experiments. He held various teaching posts in Germany until in 1925 he returned to Munich where he continued to live and experiment. Here he completed all his work on the bee that was to astound the world. Among his discoveries were the power of sight and smell in bees, their sensitivity to ultraviolet and polarized light, the guiding power of scents which can lead the forager to an actual honey flow and of course the discovery of the "talking" bee dances.

Von Frisch has a number of publications to his credit. He early booklet *From the Life of the Bee* has gone through several editions over many years but one of most widely read and quoted is the *Dance Language and Orientation of the Bee* which was published in 1965 and was translated into English by Chadwick in 1967. One of his most fascinating books was his autobiography, *A Biologist Remembers*, published in 1957. His *Bees, Their Vision, Chemical Senses and Language* (Cornell University, 1950) is still being printed.

Von Frisch was awarded the Nobel Prize in 1973 for his work in animal behavior.

The work of von Frisch in respect to the communication by bees was challenged by several but in the end his experiments were verified by other scientists.

Dr. Roger Morse, in his book *Bees and Beekeeping* observes that "the criticism of von Frisch and his research, although it has dismayed many people, has not detracted from the value and importance of his work."

The world of science has lost a great man in Professor Karl von Frisch.

Hoyt Taylor

HOYT TAYLOR, Secretary of the Illinois State Beekeepers' Association for the past 45 years, was a farmer and beekeeper in the Pleasant Plains area all of his 73 years. He was a 35-year member of The American Honey Producers' Association.

He had been on the apiary inspection staff of the Illinois Department of Agriculture for 31 years, and assisted at the State Fair every year.

He is survived by his mother, his wife Rita, and one daughter, Joy, who reside at Rte. #2, Box 249, Pleasant Plains, IL 62677.

Ohio Beekeepers Honored

Ohio beekeepers was among the select number of Ohioans recognized by the Ohio Agricultural Research and Development Center during Centennial Showcase, a four day celebration of the institution's 100th anniversary. Martha Pemberton, a Stark County beekeeper was presented a bronze centennial medallion which was designed especially for the Research Center's 100th anniversary. John Root of the A. I. Root Company and Hobert and Doris Fulton of Columbus were also honored with medallions.

Ohioans receiving the medallions were chosen in recognition of outstanding contributions to the College of Agriculture and Home Economics at Ohio State, to the Agricultural Technical Institute, to the Ohio Cooperative Extension Service (including 4-H), to the Research Center, or to the advancement of Ohio's agriculture, its home and families and the management of its natural resources.

Gleanings Mail Box

(Continued from page 482)

Patty On Foil

Dear Editor:

I received a letter from Dr. Martha Gilliam about her October 1981 article and my article in the June 1982 *Gleanings*. Dr. Gilliam mentioned that her use of **foil** under the antibiotic extender patties was for the purpose of making the patty residuals easier to work with when she made her measurements of consumption. She did not mean to give the impression that patties should be placed on foil.

In fact in a letter to me dated June 30, 1982 she recommended using the patties between two layers of wax paper.

She also said, "Researchers occasionally do some strange things, but often we have reasons for them." My reaction to that statement is this: I agree researchers occasionally do some strange things but generally they have good reasons for them.

P. F. (Roy) Thurber
5522 127 Ave. N.E.
Kirkland, WA 98033

Beekeeping In Nepal

(Continued from page 510)

only a starter strip of foundation the combs may not be straight.

The Future Bee In Nepal

I recommend that no European honeybees be introduced into Nepal until a local beekeeping officer is appointed. At the same time the appointment of a beekeeping specialist through the FAO should be made. The main problem is that very few people in Nepal have had any beekeeping experience. I am aware that American foulbrood was introduced into Formosa, Thailand, Burma, and probably other Asian countries by do-gooders who did not fully understand the seriousness of the disease problem. The introduction of new plant or animal species anywhere must be done with great care. Equally important, expert beekeepers thoroughly familiar with introduced species, must be present to sustain such an introduction.

During my short stay in Nepal I was helped greatly by two people. Gordon Temple, a UNCF officer who has spent much of his life in Asia and many years in Nepal, spent an entire day with me and introduced me to several Government officials and beekeepers. Benjamin A. Underwood, from Mount Tom, Masscachusetts, was a great help and made it possible for me to see many colonies in a short period of time. He had first gone to Nepal seven years ago with the Peace Corps, working in the beekeeping program and has been a frequent visitor since. UNCF loaned me a vehicle that enabled me to travel widely to see the scattered hives that remained.

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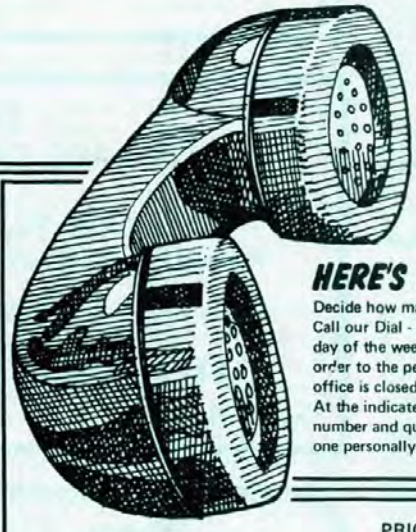

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News and Events

WISCONSIN
ETN Program

Wisconsin beekeepers can learn about "Fall and Winter Management of Bees" during an educational Telephone Network (ETN) program 8:30 to 10:20 p.m., Oct. 6.

Subjects will be winter requirements and colony preparation, including late fall feeding with sugar, medication for diseases, colony organization, protection from wind and extreme cold, and overwintering in controlled environment.

Gojmerac and beekeeping experts from the USDA Bee Research Laboratory in Madison will present the free program. The speakers said time will be reserved for you questions.

If you would like to participate or listen to the ETN program, contact your local county UW-Extension office to make sure a room is available.

ETN functions like a huge telephone party line which links participants throughout the state with speakers in Madison. ETN sites are located in every county.

TEXAS
Basic Beekeeping Course

An 18-hour basic beekeeping course will be offered by Paris Junior College's continuing education division beginning Tuesday, September 21, according to June Jones, Director of Continuing Education at PJC. Classes will be held from 6:30 to 9:30 p.m. Tuesdays and Thursdays for three weeks in the Alford Center.

Fee for the 18 hours of instruction is $35, to be paid in advance by mailing a check payable to Paris Junior College to the Continuing Education office or going by the office in the Alford Center on campus.

Instructor will be A. G. Bolton, who will use slides, lecture and observation in the class. He has taught in the past for Paris Junior College and for the Gordon Cooper Area Vocational Technical School in Shawnee, Oklahoma.

The course will be valuable for persons interested in establishing a beekeeping business and selling honey and/or pollen, the instructor said. More information may be obtained by calling the PJC continuing education office, (214) 785-7661, extension 145.

ISRAEL
International Conference on Apitherapy

The Conference will deal with the composition, biological properties and uses — mainly in medicine (human and veterinary) — and cosmetics of the various bee products: honey, royal jelly, propolis, pollen, bee venom and beeswax.

Those who are interested in attending the Conference should write to the Secretariat, International Conference on Apitherapy, P.O. Box 29784, Tel Aviv 61297, Israel.

WEST VIRGINA
West Virginia Beekeepers Association

The Fall (Annual) Meeting of the West Virginia Beekeepers Association will be held September 16-18, 1982 at Camp Caesar 4-H Camp near Webster Springs, W. Va. The full conference cost is $31.00 per person, which includes two nights lodging and 6 meals. For further information or to register, contact Ruth H. Cahn, High View, WV 26808.

ARKANSAS

The Arkansas Beekeepers have organized a new State Association. It has been without one for several years. With 3,281 State registered beekeepers, a very active program has been planned for this fall and next year.

The first statewide meeting will be held in October. Also there will be some district meetings held in Sept.

FLORIDA
Florida Beekeeping Course

A beekeeping course will be held at Hillsborough Community College, Dale Mabry Campus, Tampa, Florida. Beginning September 18 through October 23, 1982. Saturdays from 9 until 1 o'clock.

An enrollment fee of $13 per person is charged.

For further information, contact Hillsborough Community College; P.O. Box 22127; Tampa, Florida 33622.

INDIANA
Michiana Beekeepers Association

The Michiana Beekeepers Association will meet on Sept. 19th, 1982 at 2:00 p.m. in Potawatimi Park, 2000 Wall St. South Bend, Indiana. To reach the park from Mishawaka Ave. go to Ironwood, south one block to wall, turn west — Watch for M.B.A. signs. Bring covered dish and own table service. Barbeque grills provided. Bring something made with honey for Third Annual Honey Bake-off. Prizes will be awarded. Bring extra copy of your recipe for our cookbook.

WASHINGTON
Washington State Beekeepers Association

The Host Committee for the Washington State Beekeepers Association annual meeting has decided on the Hallmark Inn in Moses Lake, Washington as the site of this years conference. The dates to mark on your calendar are October 15 and 16, 1982.

A block of rooms have been reserved at the Hallmark Inn for your convenience. Prices will be approximately $33.00 double occupancy. Plenty of RV parking is available close to the Inn. Many restaurants are located within close proximity and some in easy walking distance should you desire a change from the Hallmark's cuisine.

Hunting season starts the weekend before the Conference so bring your equipment and plan to spend the whole weekend and a few days of vacation if you can. Registration applications will be available shortly to Beekeepers Associations and to those individuals with apiary identification numbers.

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THE INTERNATIONAL BEE RESEARCH ASSOCIATION regularly publishes new information on bees, beekeeping, and hive products, for beekeepers and scientists all over the world. Mail inquiries from USA: H. Kolb, P.O. Box 183., 737 West Main, Edmond, OK 73034, Phone: (405) 314-0984. IBRA PUBLISHES: **Bee World,** a quarterly journal for the progressive beekeeper. **Apicultural Abstracts,** a survey of scientific literature from all languages. **Journal of Apiculture Research,** for original bee research papers. Books and pamphlets on all beekeeping topics. Catalogues of publications and details of journals and membership $1. Specimen copy of **Bee World** $1.50; **Journal of Apicultural Research** $1.50; **Apicultural Abstracts** $2.00, from INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks. SL9 ONR, England. TF

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SCOTTISH BEE JOURNAL. Packed with practical beekeeping. Sample copy from Robert NH Skilling, FRSA, 34 Rennie St., Kilmarnock, Scotland. Published Monthly, $4.00 per annum. TF

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription (Sterling cheque 2.22 p.or U.S. $6.) Post paid. The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex. RH10 3DS. TF

INDIAN BEE JOURNAL Official organ of the All India Beekeepers' Association, 817, Sadashiv Peth, Poona 411030. The only bee journal of India Published in English, issued quarterly. Furnishes information on Indian bees and articles of interest to beekeepers and bee scientists.

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Badger Bee — official monthly magazine of Wisconsin Honey Producers. $8/year. Free sample copy — Badger Bee, Route 2, Clear Lake, WI 54005. 9/82

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Sourwood Honey in 60's. Serious inquiries only. Whistle Creek Apiaries, Rt. 1, Box 33A, Lexington, VA 24450. (703) 463-3379 ALT/11/82

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WANTED—All varieties bee gathered pollen. Must be clean and dry. Pollen traps available. Hubbard Apiaries, Onsted, Mich. 49265. Phone: 517-467-2151. TF

WANTED — Old Beekeeping Books and Bee Journals. James Johnson, 107 State Ave., Terra Alta, W.V. 26764. TF

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FRESH, PURE, Bee Pollen available in 1 pound containers at $8.50 per pound postpaid. 10 pound bulk pack at $7.90 per pound. Large lots, ask for price. Hubbard Apiaries, Inc., Onsted, Mich. 49265. TF

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Allow manufacturing time on large orders. Marvin Smith Apiaries, Rt. 1, Parma, Idaho 83660, Phone 208-722-5278 days. TF

Root Beekeeping Supplies in **Northern Illinois** and Chicago area. Rich Davis, Lockport, Illinois (815) 838-1351. 12/82

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WE USE ALL POSSIBLE CARE in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

ONE HUNDRED full 10 frame colonies of bees $40.00 — $50.00. Heavy with honey. State inspected with 3 stainless storage tanks. Phone 904-245-2461. L.M. Hubbard, Belleview, FL 32620. TF

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Two hundred strong, heavy singles, June 82 queens, good equipment. $40 each. Almond and alfalfa pollination available to buyer. T-H Apiaries, Concord, CA. 415-676-9375. 10/82

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One hundred single story hives. 1982 Queens. Good Equipment. All or part. $44 each. 10% deposit. Pat Heitkam, Rt 2, Box 2542, Orland, California, 916-865-9562 evenings. TF

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South African Bee Journal
Bi-monthly publication of the S.A. Federation of Beekeepers' Associations. Primarily devoted to articles on *A. mellifera adansonii* and *A. m. capensis*. Foreign subscriptions at 10 South African Rands per annum (payable in South African currency only). Subcriptins to: Prof. H. R. Hepburn, Dept. of Physiology, University of the Witwatersrand, Johannesburg, RSA.

(Continued from page 492)

been made by the end of July although in recent years the honey flow extended into August. The best colonies made up to 125 pounds, but the hard winter and spring conditions resulted in a number of sub-par colonies. Looking for increase in honey retail prices about August 15th, due to about 4¢ per pound increase in wholesale price. Quality honey crop will help to hold domestic honey market against packers of imported honey. Strong honey flow since June 25th in North Dakota, although same areas of state bees were still being fed July 10th. Hot, humid conditions with adequate moisture. Sunflower acreage up 36% from last year. Crop prospects good at end of July.

Region 5

Bees being fed in mountains of Western N.C. and Virginia. Light sourwood and clover honey flow in some areas of N.C. but other areas better. Weather very unsettled with hot and dry and cool and wet periods. Late May cold hurt nectar production beyond anyone's memory. Florida has had excessive rain in all areas. Honey flow inactive at beginning of August but most colonies are full with some stores. Earlier crops of palmetto and mangrove were spotty with high moisture content. A long flow from cabbage palm. Brazillian pepper showing good growth.

Region 6

July weather hot and humid with averagé rainfall in Kentucky. Honey production is below average. Honeydew flow was heavy in certain areas, which granulated in the combs. Bees worked clovers and alfalfa and hoping for good flow from soybeans and bluevine during August. Honey light in color and mild in flavor. Good prospects for fall honey flow in Tennessee. Good moisture conditions. Quality of early season honey is above average.

Region 7

Honey production in Southeastern Oklahoma is very short. Hot, dry weather followed wet spring. Cotton very late and alfalfa acreage decreasing. About 20 pounds per colony average. Bees are in excellent shape for the soybean honey flow in Arkansas. Honey sales slow. Arkansas is 3½ inches above normal in rainfall at the end of July.

Region 8

After excellent spring build up bees have had a dearth of nectar during July in Colorado. Crop outlook is poor as extracting begins at end of July in the Arkansas River Valley area. Retail prices steady. Sweet clover bloom heavy in Montana during July. Honey production should be near record level in yield per colony. An unusual amount of absconding occured in early summer from hived swarms, splits and package colonies. Honey crop is excellent and very light in color.

Region 9

Bees in good condition in Oregon. Generic brand honey is on the market here at $3.69 per 3-lb. jar. Central coast of California has prospect of good buckweat crop. The orange honey crop has been substantial. A large quantity of the California 1981 crop of honey remains outstanding under government loan.

(Need a reporter in California and in Washington State.)

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2½ lb.

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Over 100 years of quality and service.

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