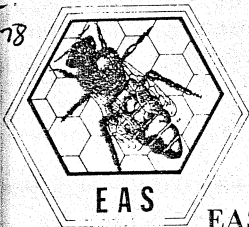


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# EAS JOURNAL

EASTERN APICULTURAL SOCIETY OF NORTH AMERICA, INC.

APRIL, 1978

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## MARIE MORSE

The news of the death of Mrs. Marie Morse on February 14, 1978 leaves the Executive Board of the EASTERN APICULTURAL SOCIETY and its membership deeply saddened and immeasurably poorer.

Her home for 30 years was "Stony Brook" on the Cornwall Bridge Road, Sharon, Connecticut, a mountain-side cottage and arboretum in the woods. She had been ill since the latter part of December and died at the Sharon Hospital.

Mrs. Morse was a retired Executive with the W.T. Grant Company where she had been a buyer for 30 years.

Marie had served as EAS Secretary in 1972, acting Secretary from September of 1974 until August of 1975, and Treasurer from September 1975 until her death. She also was EAS Historian since 1973 and a member of the Connecticut Beekeepers Association.

She gave unstintingly of her time and energy and looked forward with great enthusiasm to each Annual Conference. Marie had many friends in the Society. We are indeed richer for having had her in our midst.

Mrs. Morse is survived by three sisters Catherine, Margaret and Fran of Erie, Pa. and a nephew Donald from Pittsburgh, Pa. She was buried in Erie, Pa.

We are grateful to Marie Morse for her many contributions to EAS. She was loved and will be missed. Contributions in Marie Morse's name can be sent to the Sharon Hospital, Sharon, Connecticut 06069.

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## Honey Outlook and Situation

U.S. honey production totaled 176 million pounds in 1977, down 11 percent from the previous year, and second only to the Soviet Union in honey production. The 1977 U.S. honey crop was produced by 4.32 million colonies, up 1 percent from the previous year. Average honey yield per colony was nearly 41 pounds, 12 percent below 1976, a major decline.

Dry weather and reduced irrigation water reduced honey production in the West. The extended drought in California reduced honey production for the second year in a row. Colonies there have been supplementally fed since last spring. The very cold winter in the eastern part of the nation resulted in high colony losses.

In mid-December, beekeepers reported about 30 million pounds of honey on hand for sale, compared with stocks of 34 million pounds the previous year. Stocks in mid-December were 17 percent of U.S. production, about the same as in 1976.

Total U.S. honey consumption of about 240 million pounds in 1977 was down 20 million pounds from 1976. Per capita consumption of 1.1 pounds last year was down slightly from 1.2 pounds in 1976. Honey exports totaled about 5.5 million pounds in calendar 1977, up from 4.7 million pounds in 1976. U.S. honey imports in 1977 totaled

about 65 million pounds, nearly the same as 1976.

Honey Outlook for 1978 - U.S. Honey will likely continue near present levels over the next few months. The 1977 world honey crop is sufficient large to provide sufficient supplies to the United States in the first half of 1978 for U.S. imports to supplement U.S. production. And most domestic areas will start the spring with adequate moisture for floral crops-particularly in areas where tree bloom is important.

Conversely, the nation has been gripped by a cold winter though not as severe as in 1977. Winter colony losses likely will not be as severe as last year since the heavy snow in January helped to insulate the hives from low temperatures. Because of heavy losses last year, more beekeepers in the northern tier States have probably wrapped their colonies this winter.

Thus, all in all, the odds seem for a larger U.S. honey crop in 1978. With larger honey production likely, imports will probably decline in calendar 1978 from the 65-million-pound level in 1977. Conversely, exports will probably total slightly over 5 million pounds in calendar 1978, similar to the 1977 level. With these events, prices could soften slightly during the summer.

## A Simple Way To Make Bee Feed

For the benefit of the many new members who have joined, the following formula for feeding bees is published. This appeared in the May 8, 1977 issue, and the author of it is Robert Thompson, of Brunswick, Missouri. He has used this formula for some time with great success and we pass it on to you.

Requirements: Plastic frame feeders, sugar honey, sulfa and water. (Be sure honey comes from your own hives and that it is free from disease).

Fill plastic frame feeder full of dry sugar with  $\frac{3}{4}$  inch from top. Mix up a syrup of  $\frac{1}{2}$  water and  $\frac{1}{2}$  honey and heat it to 160 degrees until it is good and hot. Mix in  $\frac{1}{4}$  teasp. sulfathiazole to each 10 pounds of liquid. Now pour this hot mixture in the feeder all the way full and let it soak into the sugar. If syrup stands in the feeder, pour little more dry sugar over it.

In about 2 days this feed will become hard and the bees will take it real good. A feeder full will last about two weeks if you have honey in the hive also. These frames are easily given to the bees, just remove empty frames near the clustering bees and exchange for plastic feeder. If it is warm enough that bees are not clustering, anyplace in the hive is O.K.

This is great for early brood rearing. This formula is practical because it does not take a lot of extra equipment. Ideal for the small beekeeper.

### EAS JOURNAL Eastern Apicultural Society of North America, Inc.

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\*Of which \$2.00 is subscription to Journal.

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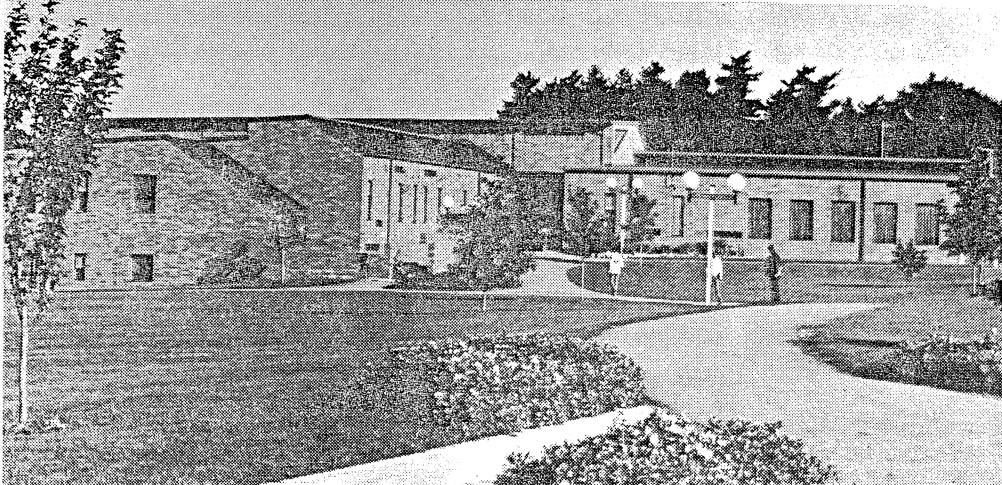
### Simple Way To Feed Bee

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The beautiful setting of the Agricultural Technical Institute near the site of this year's Eastern Apicultural Society meeting in Wooster, Ohio. ATI offers a 2 year degree in Bee Technology and participants in the E.A.S. meeting will have a chance to tour the facilities. John Caulk, the course

instructor, will be in charge of the E.A.S. workshops and one of the highlights will be a demonstration of making a bee beard. There will be special programs for youngsters and ladies in addition to the usual lectures and workshops. Make your plans now to attend August 9-12.

### A Mite More Honey With a Few Less Mites?

Adult honey bees in the United States are commonly infested with two species of mites, which live by sucking blood from bees' bodies. No one yet knows for sure whether these mites reduce the efficiency of the colony or cause other problems, such as shorter lives of infested bees. But we do know that on other animals, infestations of lice and ticks can cause weight loss and reduced vigor; also, that biting flies can cause serious problems for cattle. For these reasons, controlling mite populations would be of value so that we can determine whether uninfested colonies make more honey than infested ones. Mite control could have other value by making it safe to import adult and immature bees from countries where there are mites not present in the United States. Currently, importation from all such countries is prohibited.

If you think your colonies do not have mites, you are probably in good company. When I first came to Illinois, I suggested to the late D. Vern Milum that he might study the relationship between the presence of mites and the frequency and pattern of grooming behavior between adult bees. He had already published observations about grooming behavior and I thought this would expand the work. Dr. Milum said that our bees do not have any mites, and there the proposal died.

P.G. Clinch of the Wallaceville Animal Research Centre in Upper Hutt, New Zealand, decided that perhaps he could control the external mites on honey bees by making a bee's blood poisonous to the mites without killing the bee. He had already found that he could not kill the two external

species of mites with smoke containing the miticide chlorobenzilate. This smoke treatment kills an internal mite species, the acarine mite, which is not known to be present in the United States.

With J. Faulke, Clinch fed 23 miticides and insecticides in sugar syrup to caged, infested bees in the laboratory. They also fed four materials to colonies in the field. The work was done in late autumn and early spring when the greatest numbers of mites were present on the bees. Groups of caged bees were fed the test compounds for 3 days at a concentration one-tenth of that which would normally kill half the bees. The field colonies received 2 liters of sugar syrup plus a pesticide compound.

The insecticide endosulfan (Thiodan) significantly reduced the number of mites on the bees as well as the number of bees infested. Other materials were less effective, and none of the infestations was eradicated. Very few bees died from the treatments.

Obviously, we would not want to feed all our colonies some toxic material in order to control the mites on the bees. However, the study was of great value because it showed that it is possible to kill external mites by making their host, the bee, poisonous to them without killing the host. When we find a more suitable material for this purpose, we may be able to see whether mite-free colonies are better honey producers than infested ones. We could also establish a quarantine procedure that would permit the safe importation of new breeding stock.

## Guatemala's Honey Industry Shifting to Jungle Area

Largest honey producer in Central America, Guatemala is shifting the thrust of its production to the northern jungle area of Peten. This development brightens the outlook for Guatemalan honey, despite 2 straight years of adverse weather.

During this period, honey production was estimated at 2,900 tons in 1976 and 2,400 in 1977, but next year Guatemala's honey outturn could rise again as production efforts expand in Peten and if normal weather returns.

Long-term expansion of Guatemala's honey production, averaging nearly 3,000 metric tons annually over the last 5 years, is expected to continue. Most of this outturn flows to export markets, with West Germany being the major destination. In 1976, however, the United States increased its imports of Guatemalan honey and may take even more in 1977.

Guatemala's usual production/export pattern resembles that of its northern neighbor, Mexico, the world's biggest honey exporter. Both countries are relatively small honey consumers, especially in their rural areas. Guatemala normally exports about 85 percent of its honey output.

In 1975, there were an estimated 125,000 bee colonies (hives) in Guatemala. The average hive produced about 57 pounds, comparing favorably with average hive yields of about 18 in Italy, 44 in Mexico, and 99 in Australia.

Although about half of the nation's hives are located in south-central Guatemala, output in this order honey-producing region has declined recently because of deforestation and the increasing use of pesticides. To give more protection from pesticides, hives are just starting to be moved from area with the flowering seasons. Another 10 percent of Guatemala's honey production comes from the Alta Verapaz Department in north-central Guatemala, but output here appears stable and production techniques somewhat outmoded.

It is to the new Peten areas that the future of Guatemala's honey industry looks. Production here, now about 40 percent of the nation's total, is growing rapidly. Commercial beekeeping is following the newly built roads running from Flores, the Capital of Peten, in the center of the Department. Some 20 beekeepers in operation here average about 2,500 hives apiece.

The traditional type of honey exported by

Guatemala, a mixture of all Guatemalan honeys, is light amber in color and has a pleasant taste. Several regional honeys, however, are available to exporters.

Exporters pay a 2-percent tax and are required to have a sanitary inspection registration. Processing plants are inspected annually for this, and the registration number must appear on each drum of exported honey.

Guatemala's honey exports, averaging 2,600 tons during 1968-72, rose to 2,800 in 1974 before slipping to 2,700 in 1975. Because of dry weather and short supplies over the past 2 years, the exportable surplus dipped to 2,500 tons in 1976 and 2,000 this year.

In 1975, West Germany took 80 percent of Guatemala's honey exports, with the United States a distant second. Last year, however, U.S. imports of Guatemalan honey nearly doubled, rising from 183 tons in 1975 to 331 tons. During this period, U.S. total honey imports jumped from 21,038 tons in 1975 to 30,120 tons in 1976 with almost half of 1976's total coming from Mexico.

## World Sugar Crop

The Foreign Agricultural Service now places 1976/77 world sugar output at an estimated 86.6 million metric tons. This is 1.0 million tons above FAS's March estimate of 85.6 million tons and 4.6 million tons above the 82.0 million tons produced a year earlier. The largest increases over the March estimate were in West Germany and Spain, where final data indicates better than expected yields, and in several Asian countries.

In 1976/77, world cane sugar output of 53.0 million tons is 61 percent of total production. Beet sugar output of 33.6 million tons accounts for the remainder. Cane sugar output will increase by 3.2 million tons in 1976/77 from the year before while beet sugar production is up by 1.4 million tons.

Total world sugar output in 1976/77 is a record. It is well above world consumption, estimated at 82.8 million tons, and world carryover stocks will be up accordingly at the end of 1976/77.

Production in 1976/77 for the major producing countries is estimated as follows (in 1,000 tons with 1975/76 in parentheses): Cuba 5,800 (6,200); Mexico 2,700 (2,722); United States 6,250 (6,535); Brazil 7,500 (6,200); France 2,968 (3,239); West Germany 2,734 (2,540); Poland 2,000 (1,950); USSR 7,350 (7,700); South Africa 2,042 (1,801); India 5,950 (5,460); Philippines 2,627 (2,936); and Australia 3,390 (2,988).

Brazil now ranks first in the world in centrifugal sugar production, replacing the USSR which had difficulties in harvesting and processing its 1976/77 beet crop.



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a 2-percent tax and are required inspection registration. Processing is done annually for this, and the label must appear on each drum of

honey exports, averaging 2,600 tons in 1974 before a 20 percent tax was imposed in 1975. Because of dry weather conditions over the past 2 years, the exports dropped to 2,500 tons in 1976 and

Germany took 80 percent of the honey exports, with the United States a distant second. Last year, however, U.S. imports of honey nearly doubled, rising from 183 tons in 1975 to 366 tons in 1976. U.S. exports jumped from 21,038 tons in 1975 to 42,076 tons in 1976-with almost half of the exports coming from Mexico.

**d Sugar Crop**

Agricultural Service now places world sugar output at an estimated 86.6 million tons. This is 1.0 million tons above the 1975/76 level of 85.6 million tons and 4.6 million tons above the 1974/75 level of 82.0 million tons produced a record increase over the March 1975/76 crop in Germany and Spain, where yields were better than expected yields, and

tries. World cane sugar output of 53.0 million tons accounts for the 59 percent of total production. Beet sugar output will increase by 3.2 million tons in 1976/77 from the year before while cane sugar is up by 1.4 million tons.

Sugar output in 1976/77 is a record 86.6 million tons, above world consumption, 82.0 million tons, and world carryover of 2.6 million tons, ending at the end of 1976/77.

1976/77 for the major sugar producing countries is estimated as follows (in million tons in parentheses): Cuba (2,700 (2,722)); United States (2,700 (2,722)); Brazil 7,500 (6,200); France 2,734 (2,540); West Germany 2,734 (2,540); USSR 7,350 (7,700); South Africa 1,100 (1,100); India 5,950 (5,460); Australia 3,390 (3,390).

is first in the world in sugar production, replacing the USSR as the largest producer in harvesting and processing



Former aircraft industry engineer Charles Duncan, now a beekeeper and consultant on beekeeping, from Sancta Monica, California, will speak at the Eastern Apicultural Society meeting, August 9-12, On Opportunities That Come to the Urban Beekeeper. For E.A.S. registration information write E.A.S. Registration, c/o Wm. McNutt, 245 North St., Columbus, OH, 43216.

**And, The Honey Bee**

Not everything was serious at the State House last week. The House had some fun with a bill to designate the honey bee as the official state insect. Rep. Peter Giuliani, R - Montpelier, reminded the House that the honey bee wasn't such a gentle insect because the queen bee had a nasty habit of killing her suitors after mating. Despite this drawback, the Vermont House decided to listen to the Barnard school children that the honey bee should take its place along side the Hermit Thrush, the cow and a buck's head as official state symbols.

Stephen C. Terry

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## Bees and Bee Culture, 1854-1954

- 1859 - First Italian honey bee imported into the U.S.
- 1869 - First honey extractor patented.
- 1875 - First bellows smoker invented for use in subduing honey bees.
- 1876 - Comb foundation invented for use in bee hives; also roller to manufacture it.
- 1883 - First system developed for successful commercial rearing of queen bees.
- 1885 - Investigations on honey bees started by USDA.
- 1886 - Bees found non-injurious to ripe fruits.
- 1892 - First plant disease transmitted by insects discovered; fire-blight by honey bees.
- 1895 - First attempt made to determine numbers of bee per pound and amount of nectar carried by a worker bee.
- 1904 - Cause of American foulbrood, *Bacillus larvae* discovered. This disease is a major limiting factor in bee keeping.
- 1906 - Organisms causing various other bee diseases discovered and control methods devised.
- 1908 - USDA started diagnosis of bee diseases for entire United States.
- 1909 - Comprehensive anatomy of honey bee first worked out.
- 1912 - Causative organism of European foulbrood found to be a complexity of problems; the exact bacillus cause with sporulating and non-sporulating forms.
- 1914 - How bees generate and conserve heat for protection of colony during cold weather is determined.
- 1920 - Properties of bacillus cause of American foulbrood published.
- 1922 - Isle of Wight disease of honey bees prevented entry into U.S.
- 1925 - Grader developed for determining grades of honey, and honey grades devised.
- 1926 - Method and technique developed for artificially inseminating queen honey bees.
- 1928 - Controlled matings found to be a means of improving strains of honey bees.
- 1929 - Honey production costs analyzed for first time. Reaction of bees to ultraviolet and other colors ascertained.
- 1930 - Honey bees determined to gather nectar 8 1/2 miles from the hives.
- 1931 - Shipping containers standardized for live bees.
- 1932 - Red clover shown to be effectively pollinated by bees.
- 1933 - Package bees under certain conditions found not to transmit bee diseases.
- 1935 - Rearing of brood in bee colonies found to be beneficial in late winter.
- 1936 - Resistance to heat by bee disease organisms determined. Method developed for using two queens in a bee colony, thereby increasing honey production. Demonstrated that bee-collected pollen can be stored and used to supplement inadequate pollination.
- 1937 - Bees developed that are resistant to American foulbrood disease.
- 1938 - Queen bees found to mate more than once. Pollen-soybean flour bee food developed that results in stronger, more populous honey bee colonies.
- 1940 - Old bee larvae found immune to American foulbrood disease.
- 1941 - Nosema disease found responsible for premature death of many queen bees. Honey bees found to pollinate alfalfa.
- 1942 - Bees shown to pollinate flowers in accordance with their attractiveness to bees.
- 1945 - Antibiotics discovered in remains of diseased bees. DDT found less destructive to honey bees than arsenicals. Developed simple tests for field diagnosis for foulbrood disease. Hybrid bees found superior for honey production.
- 1946 - Sulfathiazole found unreliable for treating bee diseases.
- 1948 - Six shipments of bee enhanced by newly designed light-weight containers.
- 1949 - Heavy concentrations of bees in alfalfa fields during time of blossoming demonstrated to produce high yields of alfalfa seed.
- 1950 - Bees found to increase cantaloupe production by 50 crates an acre.
- 1953 - Cotton pollination experiments indicate that use of bees increases production by this self-pollinating crop.

### The Importance of A Good Queen

The potential value of a good queen can be judged by her work rather than her appearance. Colonies that have below average in population or have uneven scattered brood or less brood than the average in other colonies, are generally headed by a poor queen that is failing. In early spring, however, the absence of a sufficient number of bees to cover brood, slows down the queen. Sometimes, if the queen expands her egg laying too fast in early spring, and there is not enough bees to cover the brood properly, a real cold spell could result in some chilled brood. In this case, the bees will remove the dead brood and carry them out of the hive. A failing queen in early spring should be replaced with one from the south instead of trying to raise one especially if it is too early for drones to appear.

A lack of sufficient feed will also hamper brood rearing, which of course is not the fault of the queen. Also the lack of pollen will have the same effect. It takes almost as much pollen as it does honey or sugar syrup to produce young bees.

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### Foolproof Test Developer For Detecting Adulterated Honey

Whether a jar of honey is pure honey, or a corn syrup mixture similar to the real thing, can now be determined by a new test developed by scientists of the U.S. Department of Agriculture (USDA).

Honey adulterated with high-fructose corn syrup has posed a potential economic threat to the honey industry every since the corn syrup was introduced on the market in the early's 1970's. Many crops which depend upon pollination by bees also are potentially threatened. The syrup is low in cost and, until now, undetectable, even through analytical tests.

However, a new procedure developed by scientists USDA's Agricultural Research Service (ARS) at the Eastern Regional Research Center here, can determine conclusively whether a product is pure honey or an adulterated version.

The ARS procedure is based on a fundamental difference in the carbon atoms in corn and honey sugars. Corn sugars are slightly more enriched with the carbon isotope of atomic weight 13; honey sugars have an atomic weight of 12. Through "isotope ratio analysis" the scientists can determine whether a product contains corn sugars or honey sugars.

Since isotope ratio analysis is expensive for routine use, ARS scientists have developed inexpensive screening tests that can be conducted in a field laboratory. Suspect samples can then be given the isotope ratio analysis.

Isotope ratio analysis has been adopted as an official method by the Association of Official Analytical Chemists, a society that sanctions standardized analytical methods.

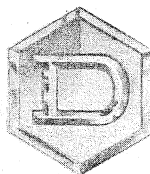
### A drinker's Breakfast

The perfect brunch recipe or just something to brighten up the start of a dreary day.

#### Scotch Grapefruit

2 tablespoons golden raisins  
2 tablespoons Scotch whiskey  
2 medium seedless grapefruit  
1 tablespoon honey

Soak the raisins in the whiskey, covered, overnight. Halve the grapefruit; cut around sections to free them and flick them into the bowl that holds the raisin mixture; stir the honey into the mixture. With a kitchen scissors cut out the membranes from the grapefruit shells and discard. Return the grapefruit and raisin mixture to the shells. Cover and chill. Makes 2 servings



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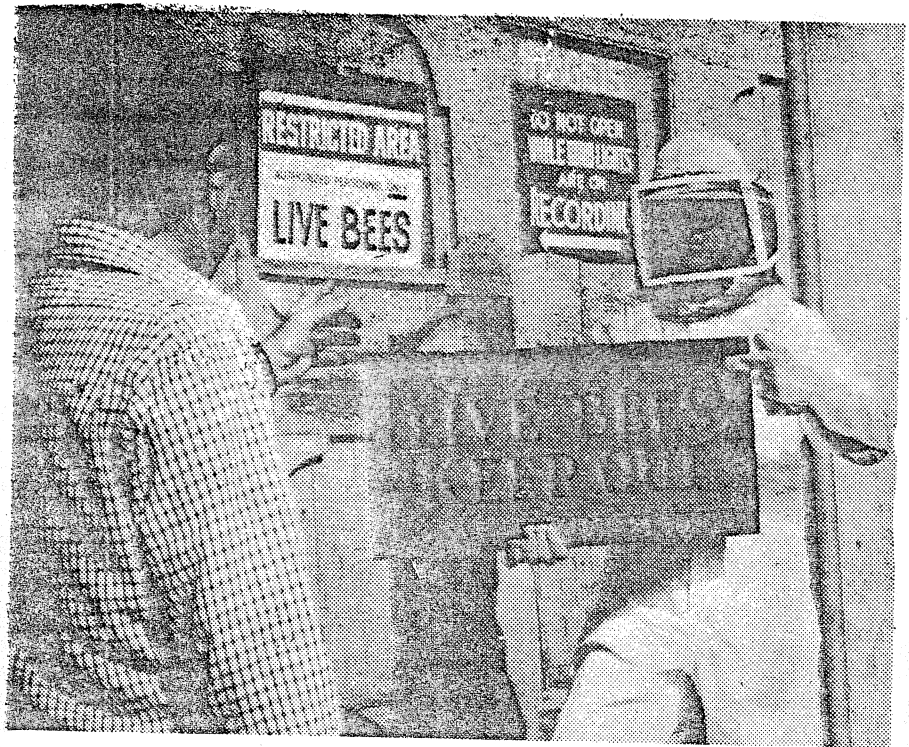
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### Something's Buzzing . . .

That old Hollywood hoopla about a "cast of thousands" is going to be hopelessly outdated after disaster freak movie producer Irving Allen unleashes "The Swarm" on the innocent public one of these days. The cast includes not only Olivia DeHavilland, Michael Caine, Henry Fonda and Katherine Ross, but almost 22 million extras - bees. According to a Warner Brothers flack, the actual number of bees is 21,750,000. Allen says the bees are always on call. Michael Caine has supposedly complained, "They don't seem to want to take direction." Olivia and Katherine were stung, but nobody else was. Anyway, it's all about how a swarm of South American killer bees sting Houston, Texas, off the map, almost. They kept the little devils inside Warner's Stage 15 in Burbank, and nobody had to tell people twice that it was a closed set.

### Pollen: Eat It or Sell It, Or Let The Bees Have It?

The use of pollen for feeding bees and for human food appears to be increasing. Signs of this increase include more advertising of pollen for sale, newspaper stories about the alleged value of pollen as a staple item in natural food stores.

The future for pollen sales looks good. Many people who like honey are probably also eating pollen for one reason or another. Beekeepers may find it increasingly worthwhile to feed pollen to

their colonies in areas where natural sources have been reduced by weed control and by change in agriculture and land use. The price paid to producer is rather low, probably around \$2.00 to \$2.50 per pound. Imported pollen is available in quantities for less than \$3.00 per pound. Small quantities of pollen are sold by beekeeping supply companies for as much as \$6.50 per pound. The price reflects the price of cleaning, packaging and handling the product. It is not clear whether this product is suitable for human consumption or only for feeding bees and the ads do not mention how to use it. In some cases the pollen is sold in a finely ground form -- perhaps to conceal inclusions such as bee body parts that are costly to remove.

How much pollen can you expect to collect per colony per unit of time? In 1967, Dr. Floyd E. Moeller, 9 American Bee Journal 107: 48-50) discussed the subject in an article about making and using pollen - containing food for bees. He stated that under ideal conditions, six colonies of bees with pollen traps should easily provide a 100 pounds of pollen in about 3 weeks. Moeller's pollen production figures are of interest in calculating possible returns per colony for the sale of pollen. The gross returns from six colonies could be \$200.00 to 650 dollars for 3 weeks of collecting of about \$33.00 to \$108.00 per colony. A 70-pound honey crop could yield \$28.00 to \$70.00 per colony depending on conditions. Pollen collecting is easier work than removing and extracting honey. End of Quote.

Elbert R. Jaycox

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## Beekeeper Stung With An Unusual Sentence

A Sacramento Valley beekeeper was fined heavily, given a jail sentence, and hit with some unusual probationary requirements this week in a Sutter County court on charges involving thefts of bee hives.

Peter Lavy, 37, 435 Hazel Street, Gridley, was fined \$1,500 by Judge James Changaris and sentenced to spend 60 days in the Sutter County jail on weekends. The unusual weekend sentencing allows Lavy to continue with his 5-day-a-week job in the city of Sacramento, according to the Sutter Probation Department. He listed no Sacramento address.

Lavy was convicted last month in a jury trial on the charges of receiving stolen property and attempted theft. The matter was prosecuted by Sutter Deputy District Attorney David Vasquez and was heard before Judge Richard Patton.

The probationary conditions include: 1) Registration of all of Lavy's bee hives with the Sutter County Agricultural Commissioner; 2) reporting of any movements of his hives to the Sutter commissioner; and 3) reporting any movements of his bees to the county to which they are being moved.



The Reverend Joseph Stewart, former Extension Specialist in Apiculture at Rutgers University, will again step behind the Eastern Apicultural Society podium to speak on the subject of The Hobbyist and Inflation. The E.A.S. meeting will be held in Wooster, Ohio, August 9-12. Registration information will be available in later issues.

## A BOX JOINT JIG

I don't know how many beekeepers make their own hive bodies. Here in the Puget Sound area an informal survey indicates about fifteen to twenty percent of the beekeepers make their own. The quality often lends much to be desired - bee spaces wrong, dimensions wrong, out of square, etc. On the other hand a beekeeper with a good table saw accurately adjusted can, if he will take pains, turn out hive bodies and supers every bit as good as the best wooden ware money can buy. Making your own doesn't pay, however, unless you can get good pine at a reasonable price. Even then, your hourly wages often are shockingly low. You can't compete with high volume precision machinery. But, if you want to try, go to it. Be careful; it's nice to have all your fingers!

First, you should duplicate exactly the dimensions of the standard hive and make blanks. These are absolutely true rectangles. 9 5/8 x 16 1/4" for the fronts and backs of a deep super. 9 5/8 x 20 for the two sides. If you use lumber with knots, as I guess you must now-a-days, NO knot should be located closer to one and a half inches from the long dimensions and one inch from the short dimensions. The reason -- you've got to cut your box joints into the long dimensions and hive staples have to set into the short dimensions or, in the case of the end pieces, the rabbits on which the

frames rest. You may decide you want to use frame rests. The older type require 7/8 deep rabbets. The flat type or supers without frame rests require 5/8" rabbets. If you buy kiln dried pine you can make your heights 9 1/2" but mist supers you buy are 9 5/8 for the reason that "pond" dreid lumber shrinks. In a year or two I think beekeepers recut their supers to 9 1/2" to avoid ladder burr combs, at least I do.

These prints by Bill Bahr are for a table saw with the arbor on the right side of the saw. If your arbor is on the left you will have to make a mirror image of the notch stopper sketched and install it on the left side of the jig. Just so you know--with this jig and your saw adjusted right you can do the notching in less than three and one-half minutes per deep super but you must have very sharp blades. If you have troubles, may I suggest you go to your local high school and ask the manual arts teacher for help. DON'T repeat DON'T, make the upright piece of plywood less than 6" high. If you have large hands make it 7" high. The height is absolutely necessary to keep your fingers out of the saw blades. DON'T repeat DON'T, use metal spacers if you use wobble washers or a dado to make the 7/8" notches. Use cardboard spacers not metal to widen the cut to 7/8". The reason is that if you use metal spacers they often will hang up on a thread on the arbor. Tighten the nut and you break off a thread.

Elbert R. Jaycox

Finally DON'T, repeat DON'T, substitute wood for steel in the guides and DO wear glasses or safety goggles when working on the saw.

Be aware you have to fiddle with the adjustments to get them just right. Once you have, say just the right stack of cardboard washers, label each and store in an envelope. Equally, your idiot stick (spacer) should be labelled and stored for re-use. Again, you've got to keep your blades very sharp. Dull Blades not only don't cut well, they are also dangerous.

That's it - lots of luck. After you get a perfect box super, say a kind word for Richard Bovard of Honolulu; this design is an adaption of his.

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MATERIALS :  $\frac{3}{4}$ " PLYWOOD X 18" X 18"  
 $\frac{3}{4}$ " X  $\frac{3}{8}$ " CHANNEL X 28"  
NOTCH STOPPER (1)

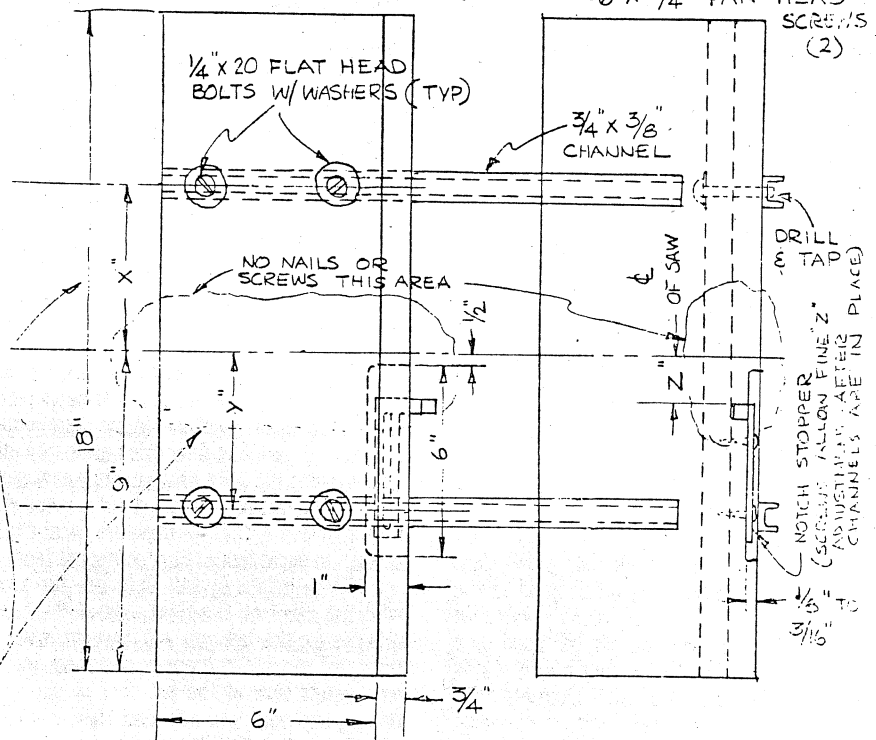
ELMERS GLUE

$\frac{1}{4}$ " X 20 X 2" BOLTS (4)

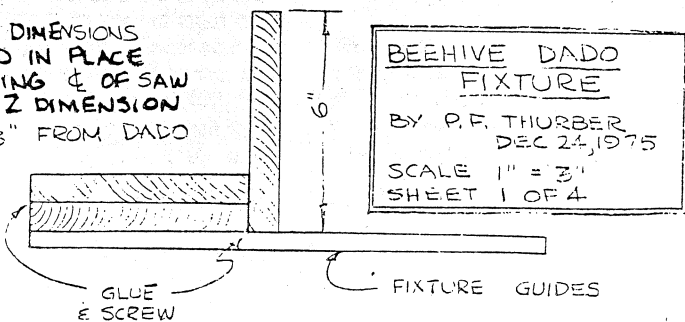
$\frac{1}{4}$ " FLAT WASHERS (4)

6 X  $\frac{3}{4}$ " PAN HEAD

SCREWS (2)



NOTE - KEY DIMENSIONS  
ARE DRILLED IN PLACE  
ON SAW USING  $\phi$  OF SAW  
AS GUIDE. Z DIMENSION  
IS SET  $\frac{7}{8}$ " FROM DADO  
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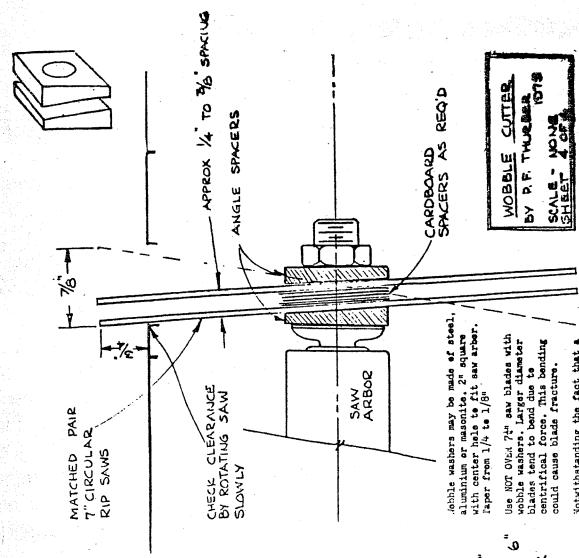


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SCREWS ALLOW FINE Z  
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1/8"

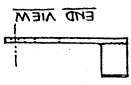


**MOBBLE CUTTER**  
BY P. F. THURBER - 1975  
SCALE - NONE  
SHEET 2 OF 4

Washers may be made of steel, aluminum or stainless. 2 square washers are required. Use paper from 1/8" to 1/64" and thicker.

Use 100 grit fine sand blades with washers. Larger diameter blades tend to bend due to centrifugal force. This bending could cause blade fracture.

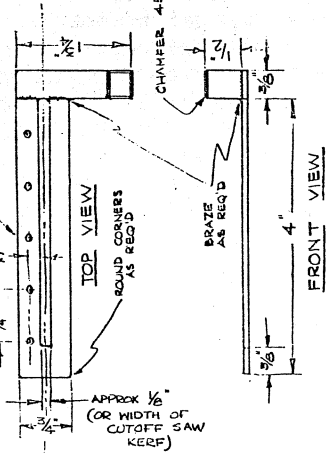
Substituting the fact that a ten inch blade, the smaller the blade the less hard the saw has to work. So use them.



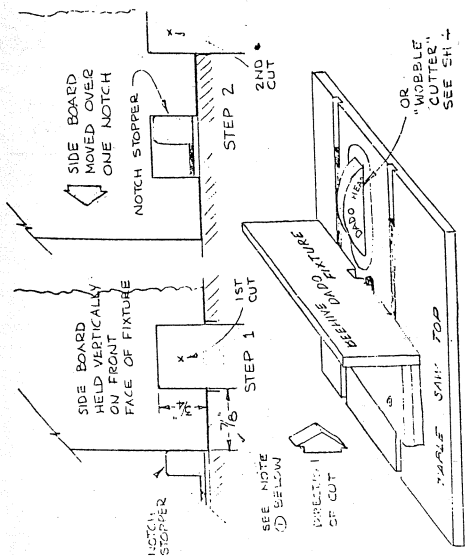
**NOTCH STOPPER\***  
FOR DADO FIXTURE  
BY P. F. THURBER - 1975  
SCALE FULL SIZE  
SHEET 3 OF 4

**MATERIALS:**  
3/8" BAR STOCK - MILD STEEL x 1/2"  
3/4" x 1/8" FLAT STOCK - MILD STEEL x 6"  
BLACK PAINT, BRAZING ROD & FLUX

3/64" HOLES (TYP) CENTERED



\* NOTCH STOPPER AS ILLUSTRATED IS FOR ROCKWELL SAW. REVERSE (MIRROR IMAGE) FOR OTHER SAWS AS REQUIRED.



**REPLACEABLE BACKING BOARD OF 1/8" MASONITE OR 1/4" PLYWOOD MAY BE TACKED TO FACE OF FIXTURE TO MAKE REAR SPINDLING.**

**BEEHIVE DADO FIXTURE**  
BY P. F. THURBER - 1975  
SCALE - NONE  
SHEET 2 OF 4

- INSTALL INSTRUCTIONS**
- SET CUTTER HEIGHT TO 3/4" WITH 7/8" x 3/4" x 12" "DIP" STICK. SET NOTCH STICK TO 5/8" FROM CUTTER EDGE.
  - CUT ALL SIDE BOARDS IN SEQUENCE, SAW ONLY ONE BOARD AT A TIME.
  - CUT ALL END BOARDS NEXT IN SEQUENCE TO MATCH WITH END BOARDS. USE 7/8" DIMENSION ON "DIP" STICK AS SPACER FOR STARTER CUT.

## The Main Activities of the Association Pusat Apiary, Pramuka - Indonesia

1. In August 1973 the first apicultural national course was organized in Jakarta, attended by governmental officials from agricultural provinces, forestry divisions, economics, horticulture, rural development, health section and provincial Committee of Gerakan Pramuka, Organization of Indonesia.

The course was officially opened by President of Indonesia - General Soaharto.

2. In August 1974, an Exhibition of bee products was organized on the occasion of a medical course held for the doctors of Indonesia University for physicians of all over the country. The exhibition was highly appreciated.

3. It was also in August 1974 that the 11th national apicultural course of Jakarta with the participation of the same provincial governmental officials representing the main branches, was organized.

4. Instruction officers were sent to apicultural courses organized by districts and provincial Councils of the Organization Gerakan Pramuka and governmental services for rural economics.

5. In May-August 1975, 9 investigators were sent to participate in the apicultural courses organized in Japan.

This course was sponsored by the Overseas Association of Technical Sciences, Japan half-governmental institution which organizes technical training courses for foreigners.

6. In November 1976, at the proposal of the Trade Ministry, the Association Pusat Apiary Pramuka participated in the International Exhibition for Food Industry organized in Paris, France. On this occasion our delegate visited also Hans Sommer

Company, in Western Germany in order to study possibilities of cooperation for processing products.

7. In March 1977, an apicultural seminar was held in cooperation with the Ministries Agriculture and Internal Affairs where Dr. Duisberg apicultural expert of Western Germany was invited to deliver a lecture. Meanwhile, an apicultural Exhibition was also organized.

8. Since 1973 Pusat Apiary Pramuka performs research work concerning raising of "Apis mellifica" bee race in Indonesia (Lampung and Central Java). It is worth mentioning that Pusat Apiary Pramuka made progress in the advance of modern apiculture in Indonesia, thus intensifying and propagating spreading of "Apis mellifica" bee race in order to accomplish the governmental plan for development of apiculture in Indonesia.

9. Scientific information was also given to those interested in the apicultural activity, also belonging to communities and governmental institutions.

Visitors overseas also took place representatives of the Australian Hunger Campaign UNICEF, etc.

Apicultural Exhibitions were organized on the occasion of certain outstanding events of Pramuka organization.

10. This year other courses of agricultural and apicultural training will be organized for investigators meant for working on an agricultural project on 10 thousand hectares in Lampung.

The aim of this experiment was to create some modern apicultural centers and productive apiaries.

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