Honey Judging Course

Designed by John Grafton and Jim Thompson

A two step program

Step 1. Take course to improve skill in entering displays at honey shows, add to the requirements of the Ohio master beekeeper program, and/or work toward becoming a certified honey judge.

Step 2. Pass a written test concerning judging criteria, serve a successful apprenticeship with a certified judge, and acquire judging equipment,

Honey Judge Accreditation Program

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One very important factor that must be remembered is that the results of a honey show, or any judged show, are that they are one person's opinion at a given point in time. Someone will get a blue ribbon and be completely pleased with the judge's performance on a particular class and everyone else will be disappointed. As the judge you must compare the entries in a particular class then based on your knowledge and experience choose the one that you believe to be a better representation of that class.

This program is designed to give you a better overall understanding of the duties of a judge. It will not tell you which entry to choose or how to resolve every question at a show. It is a goal to provide you with more knowledge to help you make a qualified decision.

Honey shows have changed over the years. At one time they basically consisted of liquid honey in various types of containers with no color class and a comb honey class. Today you not only need the type of container specified in the show rules, there may be as many as seven color classes. Then there are the different types of honey classes, the beeswax classes, pollen, observation hives, and the list goes on. Today's judge cannot simply hold the bottle up to a light and tip it to watch the bubble rise.

Thus the need for a class such as this in an attempt to standardize the methods used to judge a show. Admittedly it will make the job of judge more difficult as those competing will be aware of the criteria they will be scored on and will improve in those areas.

Professionalism is something that is the responsibility of every judge. As a judge you need to look and act the part. That is not to say that a three piece suit is mandatory but sandals, cut off jeans, and tank top is inappropriate. Your speech and actions are also being viewed by those around you.

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Trading of Signatures - proof of attendance for Ohio Master Beekeeper training and proof of taking this course

Part Two - Evaluation, Use, and Purchase of Judging Equipment

Apprenticeship training Testing, acquire testing equipment, and actual practice + (written test)

Systems of Judging:

There are two major systems used in judging honey. The Welsh system is widely used in Europe and the judges must serve an eight year apprenticeship. The judging is usually done in the privacy of a show room and the jars are compared against each other. Thus the first place is the best exhibit in the class. It takes time as the pieces in the entry are moved around to achieve the ranking order. The judge will use a torch (flashlight), a stick for testing density and tasting, and his/her years of experience. The judges also can be identified by their white uniform.

The American system uses specialized equipment to test the density, color, and impurities. Many times the judge will fill out judging sheets indicating the deficiencies. Judging may be done in front of those interested in the exhibits or done in the privacy of a closed off area. The entries are judged on several criteria and awarded points. Those entries with the most points earn the top places. I like to say that the entries are judge against a mythical standard.

If a show were judged by a qualified judge from each system, the placing of the results should be the same.

Honey Discussion

Discussion will cover Colors, Sugars, Granulation, Fermentation, Toxic honey, Honey from diseased hives, How stored in hive by bees and processed, Removing Moisture, Heating, Storage, Filtering, and honey that was found in the Pyramids.

Labeling Honey

Information that is required on the label. Producer's Name and Address as found in the telephone book. When one should use the weight of product in pounds and ounces? When should the metric system on the label be used Size of print, order of ingredients in a mixture, when to use product from other suppliers or countries.

Curriculum for Honey Judge Accreditation Class

1) Equipment used in Honey Judging
- Polariscope
- Refractometer
- Color Comparator
- Scales
- Scoring Forms
- Cleaning Supplies
- Extension Cord
- Misc. (pencil, pen, tape, stapler, hole punch)

2) Possible Classes (each will be covered in more detail later)
- Observation hive
- Extracted
- Comb
- Cut Comb
- Chunk
- Extracting Frames
- Granulated, Creamed or Whipped
- Beeswax
- Pollen
- Gift Package
- Arts & Crafts
- Specialty Items
- Producers Display
- Cooking
- Photography
- Mead
- Gadgets
- Etc.

3) Rules and Regulations

4) Judging Forms

Equipment

Almost anyone can become a judge, the key is to have the proper equipment and know how to use it. A good judge must understand processing techniques, the properties of honey, the proper tools to test and grade honey, and the experience of taste.

A judge also needs a working knowledge of honey bees in order to judge the other areas that come under the heading of a Honey Show. A truly qualified judge will have entered hive products in enough shows and variety of classes that he/she will have hands on knowledge of how to obtain a quality product.

A judge should take the following equipment and materials to the show. You should not expect the Sponsor to have judging materials.

1. Polariscope
2. Refractometer
3. Color Comparator
4. Scale
5. Extension cord and adapter
6. Flat toothpicks and/or taster spoons
7. Water for cleaning
8. Towels
9. Score Sheets
10. Copy of show rules (previously obtained when agreed to judge the show)

Polariscope

The polariscope is basically a box that holds two pieces of polarized film, with a space between them, to set the honey jar and a light source behind the lenses. There is currently no bee supply catalog that lists the polariscope. If you are able to find copies of the articles from *Bee Culture* page 577, November 1983 or *Bee Culture* page 124, March 1984 there are instructions for constructing your own. The most difficult part being to obtain the Type J polarized film.

The polariscope reveals any foreign material that may be present in the jar of honey. This would include such items as lint, bee parts, pollen, sugar granules, wax, hair, air bubbles, or any other items.

Points are awarded or deducted on the score sheet according to what is revealed by the polariscope.

An example of a possible point system would be;

Large debris	-20 or all
Medium debris	-15
Small debris	-10
Some lint	-5
Pollen	-2
Wax pieces	-5
Air bubbles	-2
Sugar crystals	-20

These points can vary, depending upon the severity of the foreign material. However the judge should develop their own sense of consistency.

Refractometer

The refractometer measures the moisture content of the honey. Most judges use the hand held type that reads moisture content between 12 and 26 percent. There are many types of refractometers, so if you are buying one, be sure to get one calibrated for honey.

The refractometer may the more expensive piece of your equipment and should be treated with care. Check your refractometer on a regular basis to be sure you are getting proper readings.. Recalibrate the refractometer if you are getting incorrect readings. If incorrect readings are obtained the refractometer should be recalibrated.

Some people will argue that a true moisture reading is not being obtained if the sample is taken from near the surface. However, if you are consistent with the sampling technique and all the samples are taken from the same area, the comparisons are valid.

Once you obtain a moisture reading, the points are given based upon a predetermined scale. The entry may, and should, be disqualified if the moisture content is too high (18.7 or higher) as honey in this range will easily ferment. Some judges also take off points if the moisture is to low (14 percent or lower). That is usually not a problem and is entirely up to the individual judge.

The point system is shown on the back of the Judging Handbook as well as additional point systems within the book.

Color Comparator

According to the United States Department of Agriculture there are seven different color classes of honey. These classes are measured in millimeters by an accurate color grader called a Pfund Color Grader. The seven classes are;

The average beekeeper does not have access to a pfund grader nor the reason to justify its cost. There are now less expensive color comparators on the market such as the Lovibond Honey Grader that most judges use because it is portable and uses less honey than the

pfund grader. It is up to the individual judge as to the device he/she desires to use for this portion of the contest.

Many fairs do not have the seven classes and will instead use a three class system such as white (1---34mm) amber (34---114mm) and dark (above 114 mm). The judge needs to know the system before the judging begins.

Some fairs allow an individual to enter the same honey in all classes while other shows will limit the beekeeper to only the color class in which the honey belongs.

In some cases the show superintendent has already placed the entries before the judge arrives and in most cases the beekeeper has done an excellent job of selecting the right color class for the entry.

The book has a “recipe” for making a set of jars that can be made up using corn syrup and corn oil. These jars will help you determine which class your honey should be placed. An update of the mixtures will be covered in class.

Once the color of the entry has been determined it is simply a matter of awarding the points if it is in the right class or not awarding them if it is out of class.

Scales

The scale should be easily recalibrated. It will be needed for entries where a specified weight is given such as beeswax, gift packages, etc. The judge should weigh the items where the entry rules call for a specified weight or weight range. Items not falling within the stated range would not be eligible for judging.

Miscellaneous Equipment

The next items on the equipment list are either self-explanatory or support type of equipment. This is not to say that they are not important as you would soon learn if you arrive at a show without them. It is best to have a box or container which contains all of the material so that you will have it when you arrive to judge. This not only makes your job of judge easier but it will also help to give the professional appearance. Scoring Forms

- Misc. (pencil, pen, tape, stapler, hole punch)
- Extension cord and adapter
- Flat toothpicks or taster spoons
- Bread knife and disposable plates
- Water for cleaning and towels
- Cork screw and small cups if judging mead
- Score Sheets, some shows will have their own
- Special forms for figuring Best of Show and Sweepstakes
- Copy of show rules (previously obtained when agreed to judge the show)

CLASSES

The classes for a show are set by the sponsor of the show. The judge cannot change or alter them in any way from what was published as the possible classes. Many times after a show the sponsors may ask the judge for suggestions on improving the next show. It's at this time that the judge should make suggestions concerning classes, size of entries, general rules, etc. however they will affect future shows not the one just judged.

As we review some of the possible classes a honey judge may be asked to judge, general comments will be included. These are not to be construed as defining classes but merely as possibilities and no doubt there are others.

Observation Hive

- Variety classes (light, dark, specific strain)
- With or without Queen (marked or unmarked)
- Single or double frame (side by side or above each other)
- Many times specified to have Plexiglas
- Uniformity of color of bees
- Solid brood pattern
- Three types of bees (Queens, Drones, and Workers)
- Amount of stored honey sufficient to keep the bees for the show
- Proper amount of bees in hive (not sparse and not overcrowded)

Extracted Honey sometimes referred to as **Liquid honey**

- Three one pound, glass, queen line (or classic) style containers (multiple jars for comparison)
- Anywhere from three to seven color classes
- Containers to be unlabeled unless fair rules stipulate a marketing clause
- Produced in current season or since last show (contestant's own product)
- Why plastic jars should not be used
- Check for Debris, particles, Granulation, moisture, adulteration, filling of jar.
- What to look for in the flavor test.

Comb Honey

- Three selections per entry type (for comparison purposes)
- Wooden section, Round section, Half Comb, Bee-O-Pac
- Cleaning of the section, was it cleaned and taped prior to installation in hive
- Manipulation of section to prevent travel stain
- Check to see if any open cells are present and other floral sources
- Sections should have been frozen to kill wax worm eggs
- Properly wrapped for show

Cut Comb

- 3 approx. 1 x 4 x 4 clear plastic cut comb container
- Product visible from all sides
- Center rib of foundation straight
- The use of thin surplus, starter strip, or the old Amish trick
- Samples cut from a template, to fit the container
- The use of a very sharp, clean knife; a hot knife and not the square box cutter.
- Well drained, no loose honey
- Clean straight cuts and uniform size comb throughout sample
- Freeze comb to aid in cutting and to kill wax moth eggs

Chunk Honey

- 3 one pound straight walled style glass container
- 3 2 ½ pound square chunk honey glass container
- Comb portions should be cut from a template so they are uniform
- Straight clean cuts on the comb, mitering the corners is allowed
- Select the comb for color and completeness
- Clean comb before inserting into jar to avoid “free” wax
- Fill jar and check the level several times as honey seeps into the open cells.

Extracting Frames

- 1 or 2 Deep frames (9 1/8)
- 1 or 2 Medium frames (6 1/4)
- 1 or 2 Shallow frames (5 3/8)
- Separate classes for wood, plastic, extracting, and cutting
- Enclosed, leak-proof container
- Frames should give the appearance of being a new frame – cleaned thoroughly
- Fully capped, straight, and bulging for easy uncapping
- One floral source is preferred
- Free of travel stain

Granulated or Creamed or Whipped Honey

- 3 one pound straight walled glass containers
- Separate class for granulated, creamed, whipped (very little whipped shown)
- Separate class for fruit added
- Prefer the Dyce method so honey will stay solid during the show
- Acquaint yourself with the following terms: seed, natural crystals, optimum temperature
- Sometimes there are different classes due to color, the white honey gives a nicer product
- The filling of the containers should be uniform without foam and up to the neck ring.
- The consistency should be smooth and hold its shape. (like creamy peanut butter)
- It should have a pleasant flavor.

Beeswax

- Natural, unbleached, straw colored
- Block (of various sizes)
- Molded
- Carved
- Novelty
- Candles
    1. molded pair
    2. dipped pair
    3. fancy pair
    4. novelty pair
- Some classes allow additional painting
- Important to keep in mind the natural color of beeswax and what causes it to become yellow, green, brown, or black
- Also know the proper temperatures to prevent shrinkage, cracking, and mold marks
- Review processing, filtering, pouring, cooling, and removal from molds.
- Entry must be current for this year, avoid displaying beeswax that has bloom

Pollen

- 1 one pound straight walled glass container (multiple containers add comparison ability)
- 2 eight ounce glass jars
- Either solid color or mixed
- Uniform particle size (no dust)
- Has the pollen been cleaned so it doesn't clump together?
- Samples should have been frozen to kill wax moth eggs
- The taste should be fresh and not moldy

Gift Package

- Size, weight must be within limits
- Shippable or not
- Limit amount not own product
- Own products may be labeled
- Product variety verses variety of extracted colors preference is usually given to the larger variety.
- Check for quality of items, most shows are going to personally produced items.

Producers Display

- Booth display, fair guidelines
- Educational and/or promotional
- Professional look (spelling, typed verses free hand)
- Arrangement should be attractive and not like a grocery store shelf.
- Use Color, Pictures, Signs that can be read from about 10 to 15 feet
- Do not overdo the information, the viewer takes about 30 seconds to comprehend the material that is presented.

Arts and Crafts

- Related to beekeeping
- Wood items
- Sewing items
- Painted items
- Ease of building or making
- Affordable
- Ease or practicable to use

Specialty Items

- Lip balms
- Creams
- Soap
- Recipe attached
- Meeting fair rules
- Pleasant aroma
- Not greasy
- Uniform amounts

Gadgets

- Related to beekeeping activities
- Self-made
- Large
- Small
- Practical and easy to use

Cooking

- Breads (yeast/quick) cookies, candies, cakes, pie, canning
- Number of items and on correct display materials for fair rules
- Recipe attached
- Correct amount of sweetening used
- Texture
- Taste
- Correct temperature used – over or under cooked
- Uniform pieces

Mead

- Usually in another area with other types of wine and judged by that judge
- Growing in popularity
- Some legal issues due to alcohol content
- In correct bottles
- Correct for class
- Aroma and Flavor
- Clarity

Other

- Photography
  Correct category – usually a single picture or a story of pictures
  Attractively displayed
  In focus and large enough for audience
  Centered and cropped correctly
  Print not grainy

- Honey pots

- Comb honey dishes

- Honey bee related nic nacs

Rules and Regulations

The rules and regulations for a show, like the classes, are set by the sponsors and should define the exhibition requirements. They may include such items as:

1. when entries will be in place
2. cost to enter
3. official tag required
4. number of entries in each class by same person or family member
5. no exhibit may be shown more than one year
6. all entries produced in current year or since last show
7. entries must be produced by exhibitor
8. judges decision final
9. all entries must be unlabeled unless specified for a particular class
10. type of containers for each class
11. weight limits for particular class
12. percentage of honey required in baked goods
13. sweepstakes award based on cumulative point score
14. not mandatory to have a first place chosen
15. may be moved or disqualified if entered in wrong class

This is just a sample of possible rules there may be more or may even be fewer. A judge should be familiar with the ones for the show that is being judged. The rules will be the guidelines for that particular show.

Judging Forms

Sample judging forms are listed in the book. However some fairs will require you to use their forms. Some judges simply assign values to the forms while others will make comments. The beekeepers enjoy the comments more than the plain scores. The use of forms can be a judge's decision based upon time restraints and fair rules.

If it is a closed show, the judging is done in an undisturbed area. The beekeepers have only the judging sheet to give them an idea of what was wrong with the entry.

The judge should keep a record of the entries judged so best of show and sweepstakes can be figured. This record is also important in cases where disputes could arise.

Articles of Interest or updates:

Judge's Report

Class ____________

Exhibitor	Points	Place	Exhibitor	Points	Place

Class ____________

Exhibitor	Points	Place	Exhibitor	Points	Place

Class ____________

Exhibitor	Points	Place	Exhibitor	Points	Place

Class ____________

Exhibitor	Points	Place	Exhibitor	Points	Place

Going For The Blue

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Spring time is the time you should be making plans for county and state fairs. Consistent winners are those that have prepared their entries well in advance. Yes, there is an occasional winner that just lucked out by entering a jar of honey or a frame of honey but the odds are against that happening if the fair is judged properly.

There are many types of entries that can be made in showing honey and this article will cover several of them.

Know Your Product . . .

First, one must understand the properties of honey. Honey is hydroscopic, has different colors, flavors, densities, generally contains two basic sugars, can granulate and ferment. ***Hydroscopic*** means that honey has the ability to take on moisture from the air. Honey in a container may absorb moisture from the atmosphere which will raise its moisture content. Most often the honey forms a "skin" and will absorb and lose moisture at a slower rate. It is even possible for honey to absorb moisture through a lid with a cardboard liner.

The coloring, flavors, and densities vary according to floral sources, soil conditions, and the growing season. Also, color can be determined by the degree that it absorbs light. Generally, honey colors range from a colorless liquid to a deep amber. It is possible to alter some colors by using the proper filter, but to change the color drastically one must dilute honey with water to the point that it is destroyed. Thus, honey cannot be lightened in color without damaging it. On the other side of the coin, honey can be darkened by heating it.

The flavors of honey vary with the floral source and there is no one that is "best". The darker honeys are generally stronger flavored and contain more minerals. However, a honey may be dark due to overheating and scorching. The judge tastes the honey looking for things that are controlled by the beekeeper such as scorching or beginning stages of fermentation.

Honeys in the United States pour slowly when cold and faster when warm. In England there is heather honey which doesn't pour at all, thus it is extracted by a press. The ability to flow is not an indication of density. ***Density*** is determined by the amount of moisture in the honey. Moisture is measured with a special hydrometer or a honey refractometer and should have a moisture content between 16.0% and 18.6%. Bees cap honey when the moisture content is approximately 18% thus any honey removed from the hive should be capped. The general rule is to remove a frame from the hive when it is 80% capped, but for show purposes you should use fully capped frames. The question about reducing the moisture content from 18% to 16% is often asked. Once honey is extracted, it is not economically feasible to remove moisture. It can be reduced before the honey is extracted by a method of passing warm air past the frame for a period of time. I have been told that 90° air passed through a super of frames can reduce the moisture 1% in a 24 hour period of time. A Michigan beekeeper has a special room where honey is cured for a week prior to extracting and can obtain a 15.2% moisture content. Too much moisture can result in fermentation.

The two basic ***sugars*** in honey are dextrose and levulose. These vary in amounts according to the floral source. Honeys containing only levulose such as California Sage and Tupelo do not granulate, while honeys like Goldenrod, that contain more dextrose, granulate rapidly. The key factors are the ratio between the dextrose and levulose and the ratio between dextrose and water. Honey that granulates gives up some of its moisture, making more water available to the rest of the honey in the container. It is possible for honey to ferment at this time due to the increased moisture content, even in a sealed container. One may retard granulation by heating honey to 145°F for 30 minutes to destroy the yeasts, but it may alter the aroma, flavor and color.

Fermentation is caused primarily by excessive moisture. It is important to keep honey in the liquid form, keep the moisture below 17%, and store it in a cool place (below 50°F).

A honey judge should use several pieces of testing equipment: a honey refractometer, a polariscope, a color comparator and a scale.

The refractometer is used to determine the moisture of the honey because the method of timing an air bubble has many variables and is not a measurement of density but of viscosity. The polariscope is a device that reveals all the evils within the container such as lint, bee parts, pollen, wax particles and granulation. The color comparator is used to check the color of the honey to see if it has been entered in the proper color group. The scale is used to weigh products that have a weight classification such as beeswax.

Know The Rules . . .

The different categories: Liquid Honey or Extracted Honey, Crystallized Honey, Comb Honey, Cut Comb Honey, Honey in Extracting Frames, Chunk Honey, Beeswax, Bees, Gift Package, and Booth Display will be covered in this article.

If you are interested in setting up categories for a fair in the Cooking area, you might consider the following: Honey Divinity, Honey Fudge, Honey Dropped Cookies, Honey Rolled Cookies, Honey Bar Cookies, Honey Nut Bread (Quick), Honey Bread (Yeast), Honey Chocolate Butter Cake, Honey Fruit Cake, Other Honey Cakes, Granola, Muffins, Home Canned Goods, Pies (Fruit, double crusted), and Pies (Single crust).

Liquid or Extracted Honey is usually divided into 3 or 4 groups, according to color. The key is cleanliness in the product and the jar. Most fairs require three or more jars so that the judge may check for uniformity of color, uniformity of filling and to eliminate the chance that the beekeeper was able to fill only one jar correctly. Be sure to select the correct number of show jars for the fair, and make sure they are the correct type.

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(usually glass), as plastic containers give strange sights when viewed through a polariscope. ***Show jars should be free of air bubbles, scratches, or other imperfections.*** It may be necessary to look through several cases of jars until you find show containers, but when you do, keep them separate from all other jars and never sell them. Wash and scald the jars and allow them to drip dry, oven dry, or use a hair drier, but do not dry them with a towel as you will put an ***unbelievable*** amount of lint inside the jar. I find that a chamois works well. The honey should be strained through a nylon strain cloth (available from all bee supply companies) and allowed to settle for a day or so. The jars are then filled to the top rim and an old cap screwed on loosely. The filled jars are then placed in a warm place for another day or so to allow any air bubbles to rise to the top of the jar. Then spoon out the honey and air bubbles down to the neck ring in all jars, making sure that all are filled to the same level. Keep the old lid on the jar until you get to the fair. ***At the last moment***, remove the lid, clean the top of the jar of any discoloration and install a brand new lid that has no scratches or dents. The new jar lids with the plastic sealing ring are the best as they don't discolor and could possibly be used again. Do not put any marks or labels on the show jars or lids. Because you do not have access to a color comparator or a pfund color grader, you might consider entering your honey in two or three classes. That way the judge will determine if you are in the proper class. Some fairs allow the judge to move entries to the proper class while others do not.

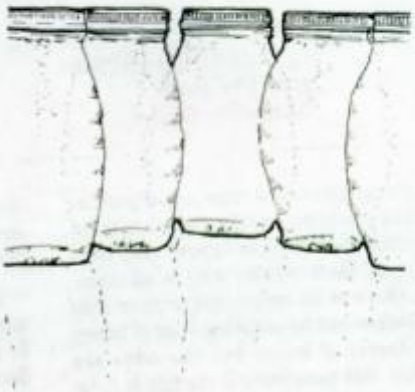
Crystallized Honey has many names and thus there has been some confusion as to what it actually is. Some of the different names are: Crystallized Honey, Whipped Honey, Creamed Honey, and Granulated Honey. There are shows where honey is actually whipped into a white mass of air bubbles. This product looks nice when it is first displayed but a few hours or days later it begins to separate and then is not a pleasant sight. Crystallized honey should be made using the Dyce method where the finished product is soft enough to remove from the container, hard enough to hold the shape of the missing portion, but not so hard that you would tear up fresh bread trying to spread it. The color of the crystallized honey should be as white as possible, and if in a clear container should be uniform in color without streaks. The honey should have a good flavor and be free from course grains of granulation. You will probably have the best results by seeding the honey with a known quality crystallized honey, (or seed).

Comb Honey likewise comes in several styles. Usually it is broken down into two groups and these are broken into subgroups as to color. The first group is the basswood sections which could be the 4 ¼ x 4 ¼ or the 4 ¼ x 5 sections. The items to look for are completeness of filling and capping, white cappings, uniformity of honey throughout the section, uniformity of the sections (from one hive), straight-even comb, and a clean wood section. These sections are difficult to produce as it usually takes a good honey flow and special manipulations of the hive. A few hints are: use new, thin ply foundation in the sections and cover the basswood section with masking tape before installing in the super.

Some fairs include the round section honey with the basswood sections which is unfair because the round sections are easier to produce. There should be a separate class for round sections. Make sure to clean every speck of propolis from the rings and use new transparent covers on both sides. Freeze all comb honey before cleaning it up for sale or display to kill any wax moth eggs that might be present.

Cut Comb Honey should be displayed in a container where you can see both sides. The comb should be completely filled out and capped. The cappings should not be travel stained and as white as possible. The section should be cut straight and clean. The honey that would have dripped during the cutting should have been drained entirely, and the comb should fill the container completely. Some keep the frames in the freezer prior to cutting, cut the combs with a heated device and have designed a cutting template for the desired size.

Honey in Extraction Frames usually have two categories and have individual rules as to the type of foundation that can be used. Generally there is a deep frame class and a shallow frame class. The deep frame class includes frames 9 1/8" and larger and the shallow class includes frames 7 ¼" and less. You should look for a frame that is straight and even, filled out to the edges and capped, and not travel stained. Hold the frame to the light and look for a frame that has



only one floral source and no cells that have remnants of stored pollen. Pick a frame that gives the appearance of being new and started with new foundation last spring.

Chunk Honey is the combination of cut comb and extracted honey, in a jar. There are usually two classes, one for 1 pound containers and one for 2 ½ pound containers. The items that apply to both extracted and cut comb honey hold for this entry with the exception of draining the cut comb. The cut comb should be uniform in all the entries. The moisture of this type of exhibit is usually higher due to the two types of honey being combined. Since wide mouth one pound containers are becoming scarce you may have problems finding these. Develop a method in placing the combs in the jars. The best way seems to be, putting two face pieces into the jar and butt in pieces in between. If you try to miter the corners, you will find that you can get three of the four pieces in correctly and the fourth goes in with large gaps. When loading the small jars, a layering approach seems to work best. Since the comb floats in the honey you will not be able to spoon out honey down to the neck ring so the jar should be filled to the top.

Beeswax may be in several classes. Some shows have classes for fancy molded, carved, and chunk (with weight groups). There might be differences in the judging as some judges prefer one color over another. I prefer the lighter yellow colors because wax can be darkened by high temperatures, contact with various metals, hard water, or different chemicals, and mixing odd bits of

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wax such as wax from brood comb. Look for evenness of color, correct weight, absence of cracks, coming out of the mold smoothly, little or no shrinkage, correct color and freedom from debris. Tips for casting wax are: pour exhibit all in one pour, use only beeswax from cappings, cast the object several times or filter it well to get rid of debris, cool the wax in the mold very slowly (wrap in towels, rags, insulation, keep in oven, etc.) and put the mold in the freezer for a short period of time (no more than ½ hour) to aid in removing the wax from the mold.

Bees may also have two classes — Italian and Caucasian. The display should be in a display case that is made well and will not allow bees to escape. Many fairs require either a plexiglas shield or the covering must be entirely plexiglas. Some provisions should be made where the display cases cannot be accidentally tipped over. There should be a queen, drones and workers present. The queen should be marked so she is easy to find. The brood comb should have a nice pattern of sealed brood, straight and free from queen cups, drone cells and holes. The feed frame should be similar to an extracting frame for display. Do not try to overpopulate the hive as they may overheat and die. Fill this exhibit at the *last possible moment.* It is best to use a queen from the hive that the brood frame has been taken from. The judge looks also for uniformity of color in the bees, but the beekeeper can't control that unless there is only one strain in the area and queens are mated only to that strain.

Gift packages are another item where judging could vary. It is a package made of various honey products that would make an attractive gift. I like to see a variety of honey products, neatly presented, with good quality. Usually there is a weight limitation so check to see if it is within limits. Try to avoid items of the same nature such as ten different types of extracted honey. Most fairs allow you to include items not produced in your apiary in this class. If you make your own labels, pay close attention to spelling and neatness. Usually the package is designed to be mailed so a semi-strong container should be considered.

Booth Displays are perhaps the hardest thing to plan and judge because everyone seems to have similar items and ideas. Usually a large percentage of the points are given to an education factor so posters, charts, books, etc. should be shown. I prefer quality home made posters over the commercially available items because it shows planning and research. The use of color is important and a variety of items will help catch the eye of the passerby. If there is a weight requirement of honey, try to bottle it in various sized containers so that it doesn't look like a grocery store shelf when displayed. Use balance in the arrangement, but not an item for item arrangement and use quality products.

Most fairs require that you register your entries long before the actual fair. Even though you do not know what colors or products you may have, enter all the categories that you have the possibility of having. This way you will not be eliminated from showing an entry when fair time arrives.□

James Thompson is a school teacher and president of the Ohio State Beekeepers Association. He has been judging Honey Shows for the last 4 years and judges 7 or 8 County and 2 State fairs each year.

★

Anybody Can Win, Unless There Happens To Be A Second Entry

★

Buy A Refractometer?

Jim **Thompson**

Recently a beekeeper stopped by to have me check some honey that he was thinking of buying to support his honey markets. He had tested the honey with his refractometer that he had purchased from a bee supply company and wondered if the honey tested 19% moisture. I noticed that the honey was quite fluid when a sampling stick was inserted. When we tested the honey with my high end refractometers, we got the same results that he had with his less expensive refractometer. So the question about his refractometer being accurate was answered. However when I tasted some of the sample honey, I noticed that it was beginning to ferment. It would have been a disaster for him to purchase the honey, combine it with his other honey and upset his customers.

So, should a beekeeper consider buying a refractometer? In most areas of the United States, honey bees will cap the honey cells when the moisture is around 18%. That is why the books mention that you should wait until the frames are 80% capped. The acceptable moisture range is between 16.0 and 18.6% moisture. By making sure that you have fully capped frames means that you should have acceptable moisture close to the upper limit. Sometimes in arid areas of the country the honey in the frames is below 18% and still in open cells.

A beekeeper can reduce the moisture of the honey by passing warm dry air over the capped frames for a period of time. There are many hot rooms and devices built to reduce the moisture of the honey. The very large honey firms have special equipment that can remove moisture from liquid honey, but the hobbyist beekeeper must rely on the warm air technique. A dehumidifier does not work well when used as the sole moisture removing device because honey has the tendency to develop a semi-permeable skin, and heating small amounts of the honey may result in scorching or darkening the honey.

A beekeeper must make sure that the extractor, settling tank, and all of the other processing equipment is absolutely dry prior to extracting. A small amount of water can raise the moisture content of the honey. Additional care must be taken in drying the equipment to not leave lint particles.

A beekeeper might be able to tell if the honey has the right moisture level by using a stick to test the viscosity. However this testing method takes experience to know the point where a honey is satisfactory.

You might fill a honey jar and time the rise of the air bubble when you invert the jar. There are many variables to this unproven test. Is the jar filled to the right point? A larger bubble will rise faster than a small bubble. What is the temperature when you are performing the test? Most

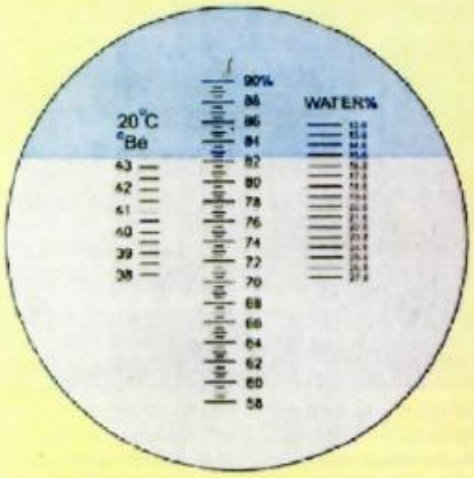
importantly, do you have statistics listing the rising times and an accurate timing device?

If you fill a one pound honey jar to the middle of the neck ring, the weight of the jar should be one pound plus the tare weight of the jar to be within the moisture limits. Not all of the jars from the manufacturer will weigh the same.

The most accurate method is to check the honey with a refractometer. But the question is which refractometer should be purchased? How often are you going to use it? How much do you want to spend? What accuracy and special features do you need?

There are all kinds of refractometers for measuring honey, maple syrup, wine, urine, sugars, soy milk, Chinese noodle soup, sodium chloride, sea water, soft drinks, fruit juices, ketchup, jam, alcohol, battery fluid, vegetable oil, and other substances. There are laboratory instruments, hand held instruments, and pencil type refractometers. A refractometer is a device that measures the bending of light through a solution. Refractometers may use natural light, additional natural light, artificial light, or no visible light. There are refractometers that have a visible scale and there are digital readout models. The more expensive refractometers are usually laboratory models with greater accuracy.

A refractometer needs to be calibrated prior to the actual reading. Some of the refractometers use distilled water to calibrate while others use expensive calibration fluid and a test block. You can use tap water or drinking water, if you are sure that water does not contain any trace elements such as iron.



The accuracy of a honey refractometer and ease of use is reflected by the scale. The inexpensive refractometers generally have a sloped stage and a transparent cover that is hinged at either the top or the bottom. The calibration adjustment is located on the top of the body of the refractometer. The display usually consists of three scales. On the left there is the Baume scale, developed to be used in hydrometers. Due to calibration problems the hydrometer method of checking honey never flourished. The middle scale is the Brix scale that measures the percent of sugar in solution. It is used for wine, sugar, fruit juice, and honey. Some refractometers will have a calibration line in the middle of the Brix scale below 79 while other refractometers use the zero. The scale on the right is water percentage scale, the most important scale to the beekeeper. When the beekeeper is interested in the values from 16.0 to 18.6, there are only three marks on this scale when the refractometer has 1.0% accuracy. The angle that the user views the scale, the light, and sharpness of the focus affect the accuracy.

Refractometers with greater accuracy usually have a single scale that is expanded with .2% increments. One would think that the scale should be between 16.0 and 18.6% but at times you will encounter 14.0 and 25.0% honey. So the scale on the Atago refractometer of 12.0 to 26.0% is ideal. The user can become so proficient that results can be read as close as .1%. The Atago flip top refractometer is turned over to read the scale and in doing so the blue background or cut off line is seen on the bottom of the scale. The refractometers with the transparent covers have the blue background at the top of the scale. I have noticed that when you have correction fluid,

molasses, or corn syrup in the flip top type of refractometer that the cut off line has an orange tint. This orange tint could be a caution that impurities like corn syrup are present. However darker honeys can show some orange coloration where there is no contamination. The coloration may be due to the mineral content in the darker honeys.

Some of the older refractometers had a thermometer mounted on the side of the body. When you took a reading, the temperature would indicate a small value to be added or subtracted to the reading. The newer refractometers have the feature of having a built-in automatic temperature conversion.

To use a refractometer, a small amount of honey is placed over the prism, the cover is shut, the instrument is turned to the light, the eyepiece is focused, the cut off knob is adjusted (On some models the focus and the cut off knob are the same.) and the reading is taken. On models where the prism is not defined, you may have to coat the entire slanted surface.

The digital refractometers have an advantage over the cylindrical type refractometer as they have a built in light that refracts through the honey, there are no viewing angles to correct, the readings are to 0.1%, and there is no focusing problem. However they have been known to develop battery problems and sometimes give faulty readings. Therefore one must develop an inclination that you are receiving a plausible reading. Because the readings are internal, one does not have the benefit of seeing blue, orange, or other colors in the display.

The hand held digital models need to be calibrated or zeroed to account for battery condition. Honey is added to the prism area covering the circular line. Close the cover and press the start button. The reading will appear in about three seconds.

If you are a honey judge or purchase large amounts of honey for sale, you should have a refractometer that is capable of readings accurate to 0.1%. If you are interested in what the moisture content of honey in your hive is currently, a refractometer that is accurate to 1% may serve your needs. The number of times that you use a refractometer should also affect which type, quality, and price that are considered. BC

The Density of Honey

Moisture Content Affects The Volume Of A Pound Of Honey

Jim Thompson

Having been a honey judge for almost 40 years, I keep thinking of ways that a beekeeper can improve their entries in a show or their honey products for sale. Last year, I upgraded my refractometer to a digital model and came up with a theory that if a jar of honey was filled to the proper level, one could weigh the jar, look at a chart and determine the density of the honey. So I proceeded to collect data to make the chart.

Most beekeepers know that five gallons of honey weighs sixty pounds. Many years ago when the government bought honey it had to be in a square tinned five gallon container which was called a "Sixty." One problem with the sixties was the chemical reaction that honey had with the tin when it was used for a few months. Today, five gallon plastic containers have replaced the sixties and those who use them for honey may have noticed that when the containers are filled to the five gallon mark they may have different weights. And, if the containers are filled so they weigh 60 pounds, the level of fill is different. Obviously, these differences in weight mean that the honey has different densities.

On a smaller scale, it has been said that a gallon of honey weighs 12 pounds. Again that information comes from the simple division of 60 pounds by five. However that 12 pound figure needs to be modified to having limits which accounts for its moisture content and temperature. Those limits are: 11.6343 pounds to 12.057138 pounds or approximately three quarts 15 fluid ounces to one gallon 0.9 fluid ounces. This presents a problem for most beekeepers who would like to know the density of the honey. Where do you get scales or volume containers that have that kind of accuracy?

I feel that the one pound honey jars would be the ideal size for the beekeeper to use. The plastic containers that are available were not considered because they present judging problems when placed in a polariscope. We want to find honey that is between 16.0% and 18.6% moisture and once that has been determined one may use any container for honey sales as long as it is made of food grade materials. When selling your honey, be sure that it is labeled properly.

Guidelines I used for this project:

- Know how much an empty jar weighs.
- Know the weight of the jar when it's filled with water.
- Know its weight when filled with corn syrup.
- The jar should be filled to the proper level.
- The jars should be weighed without the lids.

At a large honey show, when I had taken about sixty readings, a sample jar was rechecked. It was found that

Weighing an empty jar.

the entry of three jars, all filled to the same level, had one jar that was 0.4 ounces heavier than the other two. The heavy jar had come out of mold #7. Therefore there can be a great variation in weight of the glass containers. This fact destroyed my idea of making charts, but I continued to collect data. Later, I weighed two sample Queenline jars and two Classic jars at home. The Queenline jars weighed 8.0 ounces and 8.2 ounces while the Classic jars both weighed 7.8 ounces.

We know that an equal volume of water weighs less than honey. A gallon of water weighs about eight pounds. Water in the one pound Queenline honey jars filled with water showed weights of 1 lb. 3.0 ounces and 1 lb. 3.2 ounces. This means that the water in the jar was 11.0 ounces. (This is both weight and fluid ounces.) Using my metal bodied Atago "flip top" refractometer the display was totally black. The digital refractometer displayed the message "Sample out of range." I compared the volumes of water in the Queenline jar to the volume of water in the Classic jar and found them to be equal.

Testing water sample.

I checked the jars when filled with corn syrup to see if there was any difference in weight. Also, to see if there might be another way to check for "contaminates." With the flip top refractometer I have noticed an orange cast when checking calibration fluid, corn syrup, and mixtures of corn syrup. Last year in shows that I judged the dark honey grades were casting the orange color, so my test for contaminates should apply to the light amber and lighter grades of honey. When I compared the readings of the two refractometers, Atago & Misco, they were never more than .2 of a percent apart. The newer digital refractometer is

nice because you can show the results to anyone that is interested and it doesn't require any gyrations to get the right angle or focus. However you don't have any color indicators with a digital refractometer.

Filling the Classic jars with corn syrup revealed that there was 15.0 ounces of weight in the Queenline jars showing weights 1 lb. 7.0 ounces and 1 lb. 7.2 ounces respectively. This shows that corn syrup is heavier than water. After weighing some honey jars, it will be determined that corn syrup is lighter than an equal amount of honey. Therefore if the weight of a sample appears to be one ounce or more less than the expected weight, there could be high moisture or possible use of corn syrup.

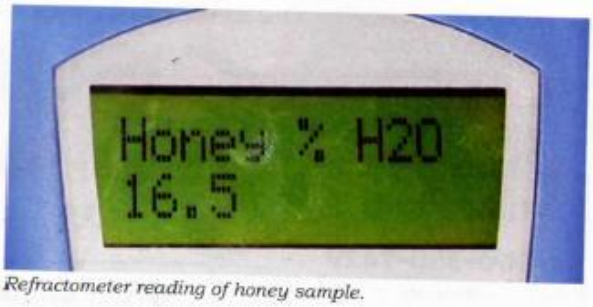
The correct filling point of a jar is to the middle of the neck ring of the container. Overfilling may create a

Filling point of your jar.

messy problem for those opening the jar and under filling a jar would cheat a potential customer as it may not have the required volume. The reason the jar is filled to the middle of the neck ring is to allow for expansion and contraction due to temperature. The difference in weight of a jar for a jar that is filled to the bottom of the neck ring and the top of the neck ring seems to be 0.1 to 0.2 ounces in weight. Commercial packers of honey have fillers that can be set to fill certain amounts of weight to fill their containers.

Jars are checked without lids due to the variety of lids and this allows you to check the fill level from another angle.

Weighing a full jar.



Refractometer reading of honey sample.

The data from the honey shows reveal 16.0% honey in a Classic jar filled to the center of the neck ring weighed 1 lb. 8.0 ounces. The 18.5% honey weighed 1 lb. 8.0 ounces. The total range of weights from the data collected varied between 1 lb. 7.8 ounces and 1 lb. 8.4 ounces. With the exception of one sample jar that was 1 lb. 7.2 ounces, which would lead one to start thinking adulteration, contamination or high moisture. Queenline jars are not used as much as the Classic jars in honey shows, but it looks like the acceptable range should also be between 1 lb 7.8 ounces and 1 lb. 8.4 ounces also.

Honey that was checked by the refractometer showed a moisture of 16.5% weighed 1 lb 8.0 ounces in an 8.0 ounce jar.

The conclusion is that a jar of honey filled to the center of the neck ring and weighed without the lid should weigh one pound plus the weight of the empty jar to be within the acceptable density requirements (16.0 to 18.6%). This measurement seems to be consistent with the division of the limits of a gallon of honey which would be 15.52 ounces to 1 lb. 0.8 ounces without the weight of a container.

The formula for volume measure is to multiply 1.42 by the number of fluid ounces of a container to get the weight of honey. This means eleven fluid ounces of honey should weigh 15.62 ounces. It is interesting to see that this calculation also falls into the guidelines. BC

Jim Thompson is a seasoned honey judge, and collector of ancient beekeeping memorabilia. He lives in Smithville, Ohio.

HONEY COLORS

Jim **Thompson**

In the 1950s the United States Department of Agriculture developed the seven color classes of honey. The USDA developed a two rack device that contained the six color break points for honey and some small jars for samples, used to determine the color class. The sets of racks were accurate because they set the standard but unfortunately they contained many small pieces that are usually misplaced.

Thereafter the pfund color grader became the color authority for United States honey. It contains a triangular tray to put honey in and one can read the color thickness in millimeters. This machine is very accurate but the parts and the machine are very expensive. Due to its size, it is primarily a laboratory type instrument.

The Lovibond Color Comparator has several models; two are used by honey judges. The early model had 10 mm cells. It is a portable machine similar to a view master and considered to be accurate. The down side of this machine was that it was also expensive and the additional glass cells were $30 each when available. On the positive side only a small amount of honey is used in the sample. The later Lovibond Color Comparator is a 33 mm machine. This means that the glass gauging disc is calibrated for the thickness of the 33 mm's cells. The honey used in the sample is three times greater and the accuracy is the same as the early model. Many judges have a practice of holding the gauging wheel against the Gamber Classic Jars or the Queenline jars to get a color approximation, compromising the accuracy.

Another color comparator that is available is the Jack Scale. You fill a white plastic container with 10 mm of honey and move it around the colored sheets on a white background. You must position yourself directly over the sheets and use it in a well lit area. Its accuracy depends upon the skill of the operator and is an inexpensive way to check the honey's color.

There is a digital machine that will analyze the color of the honey and will give you a millimeter reading. It seems to be accurate but is expensive. It uses glycerin to zero the machine, thus you may need to find a source for glycerin if you plan to use the machine on several different days. I find that it is best to keep a vial of glycerin on hand to zero between readings. If the machine is not used constantly, it will turn itself off.

In 1985, I developed a color grading system using six jars, corn syrup, and the two Karo syrups, light and dark. The jars were in one pound Queenline jars. I used a Pfund color grader and mixed the syrups to equal the break points between the color classes. Then the hobbyist beekeeper could compare his/her honey sample to these "standards." Obviously this test was meant for an individual to get an approximation. There are many variables including the type of jars used. The color of honey in a Gamber Classic jar is lighter in color than honey in a Queenline jar. The batch of 1985 Karo syrup may be different in color than 2011 Karo syrup or other brands. There is a skill acquired by an individual to decide on whether their sample is lighter or darker than the test jar. I have stressed many times that these jars are an approximation in color. However different individuals have built light boxes that allow an individual to put their honey jars next to the test jars. It gives an immediate color test without pouring or dipping honey samples.

Several large honey shows have adapted this color grading system. The people in charge of the shows have gone to this system to allow them to enter the honey samples


USDA Model


Pfund Grader


Lovibond Color Comparator


Jack Scale

Digital Scale

Color Break Points	Pfund reading	Lovibond 10 mm	Jack Scale	Hanna Digital
8	8	Approx. 7	7.5	12
17	17	17	35	25
34	34	34	47.5	33
48	48	48	65	49
83	83	83	90	78
114	114	114	117.5	110

into the proper classes quickly. In using this system there needs to be a change in fair rules. First, an exhibitor may only enter their honey in the proper class according to the test jars. Second, the fair rules should prohibit the judge from checking the honey with some other type of color testing device. Gone would be the days where an exhibitor would be allowed to enter the same color sample in each class. When the exhibitor was in the wrong color class, they would simply loose points.

Another eye opener in the color reading devices has been finding that the different color testers do not correspond completely.

You would expect the Pfund readings and the Lovibond 10mm readings to be fairly equal because the syrups were mixed to match. It is not so surprising to see the variation in the Jack scale as it is very difficult to match a liquid color to a printed color. The digital readings are interesting as they are close in most cases to the other readings.

There are differences when the sample tested is warm or cold. Another variable in the difference of colors is just how full the dark measuring cups were filled? Do you allow 1/32th" at the top to allow pouring, or do you fill the cups to the top and risk spilling? Originally it was thought that the syrups would change color over time. The 1985 sample still looks good color wise today in 2011. However, there has been some top mold on one of the jars.

I made a completely new set of break point jars using 2011 Karo Syrups. The dark syrup measured less than the 1985 syrup. Therefore you would expect the mixtures to be slightly different. This time I used Gamber Classic one pound jars. I found that the mixture of syrups had a wispy appearance when cold. By heating the jars in a microwave for 35 seconds, the warmed jars could be shaken and mixed thoroughly. Some of the mixed syrup jars had to be altered to get them back into the proper color spectrum.

Jar One, determines the break point between Water White and Extra White honey and contains corn oil straight from the Wesson jar. It appears that other brands of corn oil are the same but you should stay away from vegetable oil, peanut oil, canola oil, and other oils as those oils were not tested. This jar lid should be marked 8 mm.

Jar Two, is the break point between Extra-White and White and should be marked 17 mm. The original mix was ¼ cup of dark syrup and filled to the middle of the neck ring with light syrup. It was too dark so ¼ cup of the mix was removed and more light syrup added. It was still too dark so another ¼ cup of the mix was removed and the level was again brought to the neck ring. The final mix read 17 mm on the Lovibond and 25 on the digital color analyzer.

Jar Three, is the break point between White and Extra Light Amber and should be marked 34 mm. The mix for this jar should have 1/3 cup of dark syrup the rest being light syrup.

Jar Four, is the break point between Extra Light Amber and Light Amber and should be marked 48 mm. Add a ½ cup of dark syrup and fill the rest of the jar with light syrup. The result is slightly dark so three teaspoons of the mix could be removed and light syrup added to the jar.

Jar Five, is the break point between Light Amber and Amber and marked 83 mm. This jar contains a 50% dark and 50% light syrup mix. Another way to make this jar is to add 2/3 cup of dark syrup and 2/3 cup of light syrup. It appears to be 83 mm in the Lovibond grader but measures 78 mm by the digital analyzer.

Jar Six, is the break point between Amber and Dark Amber and the jar should be marked 114 mm. This jar is filled entirely with dark Karo syrup. The 1985 Karo syrup was slightly darker than the 2011 syrup but appears the same on the Lovibond grader. Remember if you can't see through the jar because of its color, it must be dark amber.

Your six test jars should be checked for their accuracy of the mm. measurement against a Pfund color grader or a Lovibond Grader. Once they are found to be accurate they can be a valuable measuring tool.

To build a light box, I recommend that the show classes be reviewed. If the show has only three honey classes, a light box that contains the proper two test jars and room for a sample jar on each side would be sufficient. You should have abundant space for five jars.

Whereas the show that has seven classes of honey would need a light box that would hold 13 jars or two smaller light boxes for the portability factor. Use incandescent bulbs in the lighting because fluorescent light doesn't yield a natural color. The bulbs should be behind a translucent diffuser and have plenty of ventilation. The case should be painted white for light reflection. The wattage of the bulbs will be determined by the number of bulbs across the unit and the height of the cabinet. Several appliance type bulbs may be better than one or two 100 watt bulbs. You may consider a separate box to hold the test jars while transporting. BC

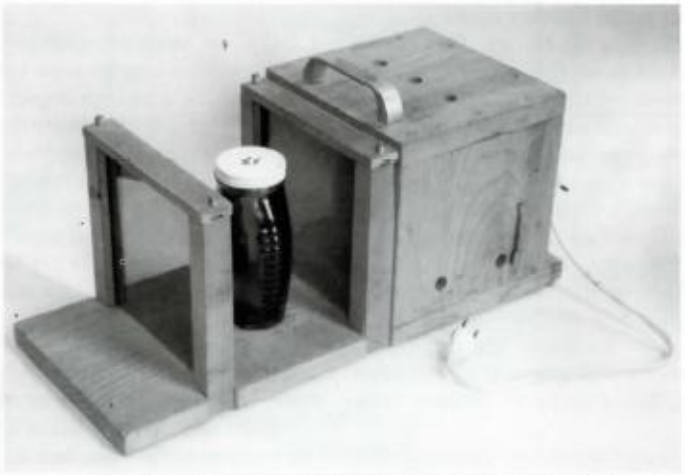
Jim Thompson gets out of the kitchen enough to be a Honey Judge, and Honey Judge Teacher.

Ann **Harman**

An Informal, Educational Honey Show

This month's meeting of the East Cupcake Beekeepers Association is going to be fun, interesting and educational. The beekeepers decided to invite the West Gumshoe Beekeepers Association to participate. The theme of the meeting is a Honey Show. But this show will not be a fierce competition but rather one in keeping with the ancient tradition of agricultural shows.

Agricultural shows have a centuries-old history. They originated as a way for farmers to present their wares for market. Livestock and crops were to be shown to prospective buyers. Today we call it advertising. And we do that in many modern ways. So a honey show is really about your ability to produce a clean, attractive product in a suitable clean container filled to give the customer the correct amount of honey. That is your goal. A honey show gives you the opportunity to see how well you are preparing your honey for market.



A polariscope is easily made, and the required polarizing sheets are available. See text.

Your market may be just relatives and friends or it may be various small and large stores; it could be in small sample jars or bulk in pails. No matter the size of your honey business, your customer deserves a first-prize product.

Hand held, and now digital refractometers are available.

Take a minute and think about your visits to grocery stores where you buy fresh fruits, vegetables, bottled and canned goods, bread and potato chips in plastic bags. Do you really buy a peach that has gone all squishy, a jar of sauce that seems a bit sticky, a badly dented can, a bag of potato chips that seems to be mostly crumbled bits? I don't think you do.

So let's get ready for the meeting. You do need to find a refractometer and a polariscope. Perhaps someone in the two clubs has such. Refractometers can be expensive but some are available for a reasonable price. A polariscope can be easily and cheaply made. It is a worthwhile item for a club to own or shared with another club. If several of these two are available it will speed up examining the honey.

You can obtain the polarizing film from the following: Edmund Optical. Go online to **www.edmundoptics.com**; put brown polarizing film in search box, open Visible Linear Polarizing Film (first on the list that appears) and scroll to Product NT70-887, 8.5 inches X 18.5 inches, brown polarizing film, $26.00. Cut it in half crosswise to give you the two pieces you need. Then you need a light bulb, a fixture to hold the light bulb, a piece of lamp cord for the light fixture and a plug. The basic holders for the film and support for light fixture can be made from scrap wood, although I have seen some fancy ones made from cabinet-grade wood.

Get a big box of plastic coffee stirrers from a grocery store and bring some things to wash off and dry the refractometer between samples. It can be a good idea to have some water handy in case of a spill. Actually honey seems to be able to get everything around it sticky the second you open a jar. Never figured out how it does that. At the end of the meeting please leave your meeting room clean so you will be able to use it for future meetings.

By October everyone should have harvested honey, except possibly first-year beekeepers. They should be encouraged to come so they will know how to prepare their honey for sale in following years.

Everyone, including those running the meeting, needs to bring a container of this year's honey. The easiest container to judge is actually a one-pound queenline type glass jar. If such a container is not available perhaps the club could purchase a case or two of queenline type glass jars to provide one jar for those who never use them. The jar, of course, can become the show jar and used by the member each year.

The meeting should open with a brief explanation of

the actual purpose of honey shows – preparing a quality product for market. Then an explanation of the purpose of the refractometer and polariscope can follow. The correct fill of the jar is important so explain that it is one of the criteria to be examined.

Have the participants examine their jars for cleanliness. Anyone have a sticky jar? Oh oh. Dinged or dirty lid? Not good. Every jar is clean and the lids are perfect? Applause, please.

Now the fun begins. And the education, too. Some members can start with refractometer readings while others start with the polariscope. After these two plus the fill of the jar have been done then the jar of honey is ready for tasting. Now you know why a big box of plastic stirrers is needed. The amount of honey that clings to them is just right to taste the flavor but not dull the taste buds.

When a jar is opened for refractometer reading, have the beekeeper note the surface of the honey. This is the time to notice bubbles and foam on the surface. If a jar is found with significant foam on the surface, here is a good start for the educational part of the show. It can be pointed out that beekeepers know that the foam is really honey but to a customer foam means something else – perhaps the honey has "spoiled." Remember, always, the customer is not a beekeeper and is not familiar with extracting and bottling procedures.

Have the beekeepers look at the honey coating the underside of the lid. Does anyone see tiny black dots? Ask for a few guesses about the source of the tiny black dots. Chances are that nobody will guess they are soot from the smoker. Suggest better ways to remove bees from their honey.

Let's hope that at least one of the honey jars will have honey close to 18.6 or even higher and another jar with honey around 14 or 15%. Everyone gather around! Use one of the stirrers to demonstrate how really thick the low moisture honey is. Ask them to imagine spreading it on a biscuit or piece of toast. Now the participants can realize that a moisture content of around 16.5 to 17.5 is a good, marketable thickness for honey.

If you are lucky enough to find a jar with honey above 18.6 it is time to have a short discussion about natural fermentation that can occur when the water content is too great. Questions to be asked include whether the honey was capped before extraction and if the honey was exposed to high humidity for a while before bottling.

Since this honey show is not a points-scoring one nobody is being penalized for too high or too low moisture content. Instead the results are the basis for discussion. Be sure to thank the beekeepers who brought the honeys. They made a good contribution to the show.

Now for the polariscope. This device will show lint, bubbles, dirt including mysterious objects, and crystals of every imaginable size and abundance. It is really fascinating to see all these things brought to view.

No, a customer may not see the assortment viewed in the polariscope but small crystals can lead to the crystallization of part or all of the jar. Unless a customer is familiar with the natural crystallization of honey the honey may be discarded. You could lose a customer who thinks your honey "spoils."

Actually crystals look very sparkly and pretty when viewed in the polariscope. It would be nice if the assortment of honeys brought demonstrates various crystallization patterns – a jar filled top to bottom with millions of tiny crystals, another with just a small amount, one with a few quite large ones on the bottom. Sometimes these few large ones can be seen without the polariscope. To a customer it's a foreign object in the honey.

Bubbles are also beautiful. They resemble small silvery spheres. Be sure the club members see the difference between bubbles and crystals.

Lint, appearing as some short streaks scattered about in the honey, is a good topic for a brief discussion. Did someone use a towel to dry the inside of the jar? Or perhaps incorrect material for straining is the cause. Another good educational topic.

Everyone has had a refractometer reading and a look at the secrets shown in the polariscope. Now it is time for a really fun part of the honey show. Tasting the honeys.

Even though member of ECBA and WGBA may live in the same general area, bee forage can vary greatly within those areas. You still have plenty of stirrers for tasting. Perhaps a pitcher of water and some cups can be available to sip between tastes.

Suggest the members vote for their favorite flavor. If sufficient strongly-flavored honey and sufficient mildly-flavored honey has been brought then two favorites can be chosen. So here is a possible final educational opportunity – if no one particular favorite has been chosen, it shows that there is a flavor of honey for everyone.

It's time to announce the topic for next month's meeting – a beeswax show. Yes, it's appropriate for the West Gumshoe Beekeepers Association to be the host. See you there! BC

Ann Harman is an expert at honey judging and running honey shows, around home in Flint Hill, Virginia and all over the U.S.

This article is included as Ann used a picture of my polariscope and has an address where one may obtain the film.