REMEMBERING SHIRLEY A. CLAYTON 11-26-37 to 09-24-06
You will always be remembered in my mind and heart - I love you Mom

Beemaster.com

***Complete Backyard Beekeeping and honeybee Course.**
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***One Stop Learning Center for All Hobbyist Beekeepers.**
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>>>>> Spring-time Quick Installation Tutorial <<<<<

Beemaster's International Beekeeping Forum NEW!

I'm proud to offer this FULL FEATURED Message forum for all members and visitors to this site, Backyard Beekeepers, Students and teachers, and anyone with questions about Beekeeping or Honeybees. Over 1,400 members and 30,500 posts world wide and growing!!! This massive forum is the Internet's No. 1 Rated Beekeeping Gathering Spot with more than 100 countries interacting in a family friendly environment. Whether you are just doing a homework assignment or interested in sharing your decades of experience - this forum is where you want to meet and interact with thousands of other members and guests.
Here you can post and reply to questions, start and take place in polls, interact with other members with private messaging, internal emails, share incredible images, chat live, read other member's beekeeping journals and much much more. Complete search able data base. Clubs welcome - fully moderated and 100% family friendly.
2006 raked No. 1 Beekeeping Forum on the Internet, Google, MSN and Yahoo! Search Engines!!!

"John Clayton's"

Hobbyist Beekeeping Course

NEW! **Beemaster's Beekeeping Web Ring**

see the many sites websites of members from the beekeeping forum

NEW! **AUDIO AND TEXT CHAT USING VENTRILO CHAT SOFTWARE**

follow THESE LINKS to learn more

"COMPLETE NOVICE BEEKEEPING INTRODUCTION"
Learn beekeeping from my 30+ years of beekeeping experience,
and go deep into worldwide interaction with the Beekeeping Forum
All content of this site is written in easy to read simple English,
so that young people and our International followers can grasp the techniques of Beekeeping.

NEW! **BEEKEEPING TERMINOLOGY - the words and terms we use**

Is Beekeeping For You?

Just a few words about beekeeping and it's responsibilities. You will need to devote time and attention to this hobby. Is it right for you? Click here to get a few words of advice. Look for help all throughout this Novice Beekeeping Course. Search Terms - Related Forum

Just How Big Should Your own Bee Yard Be?

Many of the emails I get ask this question. How much yard do you need to support how many hives? And what about swarming and neighbors? Read this before going any further if you are serious about starting a hobby bee yard. Search Terms - Related Forum

The Queen's role
A truly remarkable creature is the honeybee queen. Her control of the hive through pheromones, and the fascinating events which surround her life. I hope this is a fascinating overview of the life of the queen. Details from her birth through her long life as the ruler of the colony. Search Terms - Related Forum

Study of the Hive
A closer look at Honeybee behavior. Details on inner hive activity. Including the many stage of the worker bee's short but busy life. Here the social activities of the colony are discussed. Learn the life cycle of the honeybee here. Great place to get to know honeybees in the hive. Search Terms - Related Forum

Unique Equipment
The tools of the beekeepers are unique and make their job both easier and enjoyable. Here I discuss the basic tools of the bee yard and the proper way to use them. As with all hobbies, I suggest you get quality equipment you'll be glad you did. Also checkout the Basic Tools and Hive Construction section of the Forum. Search Terms - Related Forum

Photo Collection
This is my digital collection of wallpaper images that have been a "Beemaster photo of the day" at one time or another. Checkout this collection of hi-res "printable images" from my massive photo collection and expect more as I get a chance to upload them. Enjoy these quality wallpaper images to use on your computer desktop. Search Terms - Related Forum

Ordering Bees and Supplies
Honeybees are delivered through general mail delivery and here is where you will find information on **ordering and delivery**. Lists of on-line Resources, suppliers of Bees and equipment. Magazines and wax and honey related suppliers and crafts. Search Terms - Related Forum

Installing the Bees
Receiving the bees and installing are your first challenge after assembling the hive boxes. Follow my **OnLine Interactive logbook** as we raise two colonies, create queens, and bring my modest bee yard into the homes of thousands of forum followers. Search Terms - Related Forum

Swarm capturing

Whether your bees swarm or you receive a call from someone concerning swarms found on their property, swarms are a great way to enter or expand your apiary. Learn here what to do with these homeless bees. Tons of interesting photos here and a rear eye-opener to swarms. Search Terms - Related Forum

Nuc (starter) boxes

When capturing swarms or starting small hives for raising queens or even for lending to friends for pollination, nothing beats a Nuc box. This simple to build 5 frame hive has many uses to the hobbyist beekeeper. Buying Nucs or building them, they are always handy to have around. Follow along as I raise queens in this Beekeeping Course. Search Terms - Related Forum

Hive Inspection

When you install your bees, you make a commitment to properly care for hives Season after Season. I'm here to tell you that it can be the most enjoyable part of Beekeeping. Lets break it down to common sense and I promise you will enjoy this necessary step that will greatly improve your bees survival rate. Search Terms - Related Forum

Tai Chi of Beekeeping

This is for my dear chat friend MirandaOK. She and I talk hours about the metaphysical, mediation, Tai Chi, and other adventures beyond the body. Here I offer you a different approach to hive inspection designed to improve your interaction with the honeybees and also take you to the next level of conscience. Search Terms - Related Forum

Diseases and Parasites

Here is a simple guide to some of the ailments of the Honeybee. Most of this content is from reliable sources and not intended to be used except for general knowledge concerning these maladies and accepted treatments. Remember, I'm a hobbyist and NOT trained in the treatment of

My Bout with Wax Moth

One Winter I suffered 85% loss of colonies. One hive just **"Up and Moved out"** of their home. All I found was a hive, empty of bees and filled with worthless silt webs from the wax moth and all the honey and most of the wax was gone. The entire hive was worthless. Next to ants

Honeybees. But I offer info here to help you get started at parasite and sickness in your bee yard. Search Terms - Related Forum

robbing your honey stores, wax moth is the most common problem insect problem. Search Terms - Related Forum

Lecturing to all ages

This is something I love to do. I often visit schools, libraries, environmental meetings, agricultural centers to lecture on honeybees. Here is a **Sample Letter** - I try to show you basic layouts of display items and other props to use if you decide to speak about beekeeping. Search Terms - Related Forum

Using Hand Operated Spinners.

You can't help but love the 2 frame hand operated extractor. Here are the techniques that make this tool a fast and reliable and invaluable tool for the hobbyist. Good extracting techniques make for maximum yields, clean honey, minimum labor and maximum fun. Join young Fred as he tries a hand at it. Search Terms - Related Forum

Updated: Packaged Bee installation a pictorial of installing the packaged bees and queens. See how simple it is to install honeybees after they arrive into their new homes. Honeybee generally come via regular postal mail delivery - and once you get them and the weather is right, install as soon as possible. Search Terms - Related Forum

Beekeeping Site Web Ring

Welcome to the Beemaster's Webring Link. This link takes you to the web pages created by members of Beemaster's International Beekeeping Forum. To add your site to the webring, follow the directions at the web ring site. Search Terms - Related Forum

BONUS CONTENT

The following are NON-BEEKEEPING TOPICS that are found in my International Beekeeping forum. Register in this forum to post, but you may read these topics as a guest. This content expands our ability to know each other better and also to give us the ability to spend more time enjoying jokes, general conversation topics, the possibilities of life throughout the Universe, UFOs, Ghost and other paranormal discussion. Here are the topics in detail.

THE COFFEE HOUSE - EVERYTHING EXCEPT BEES

I think every forum needs a place for its membership to communicate about other topics - in a "nice way" of course. Please be respectful of OTHER MEMBERS and avoid combative issues. ONLY Moderators can delete your posts.

HUMOR is a FUNNY THING

Ok, you Spewed in the Fire Ring, now it's time to enjoy the funnier side of life - Share you favorite jokes, cartoons, daily comics, anything that is CLEAN and humorous here!

EDUCATIONAL AND FUN GAMES - NEW!!!

Here is the LATEST forum for users - a place to post links and descriptions to your favorite online games. I hope we get to a great listing of sites here - because we ALL need down time and there are some GREAT online games to play.

DARK SIDE OF THE MOON

Beyond the Coffee House is a mysterious place where ghosts and aliens lurk. Conspiracy theorist and Strange stories need a place too. Welcome to the Outer Limits - where things go bump in the night. Take a few minutes to see the unlimited possibilities in this vast Universe we all share.

The ORIGINAL "A Season in the Life of a Beekeeper"

The **Original 2001 Logbook** that started it all - the good, the bad and the ugly of this fascinating and sometimes frustrating hobby. Here a your chance to follow along a full year of beekeeping and also get to meet John Clayton through this very personal, very detailed and photo filled logbook. You will see how to prepare, install, deal with problems, inspect and Winterize bees as you follow along in this fun to read section that teaches you how to fit beekeeping into your every day life.

September Logbook - **August Logbook** - **July Logbook**

June Logbook - May Logbook
April Logbook - April Newsletter - March Logbook
March Newsletter

Biography of Beemaster - Beemaster's Home Page - Email Beemaster

"If there's a more entertaining site about Beekeeping, I haven't found it!" Mark Owens, Houston, TX.

Contacting Beemaster

Hope you enjoy my site and I love to hear from you all.

Before you leave, don't miss my massive homepage with dozens of topics,
and nearly a hundred of pages of text and over 1200 images at:

Beemaster.com

Please send any question or comments to

Beemaster@comcast.net

Glossary of Terms

Abdomen - the posterior or third region of the body of a bee enclosing the honey stomach, true stomach, intestine, sting, and reproductive organs.

Absconding swarm - an entire colony of bees that abandons the hive because of disease, wax moth, or other maladies.

Adulterated honey - any product labeled "Honey" or "Pure Honey" that contains ingredients other than honey but does not show these on the label. (Suspected mislabeling should be reported to the Food and Drug Administration.)

Afterswarm - a small swarm, usually headed by a virgin queen, which may leave the hive after the first or prime swarm has departed.

Alighting board - a small projection or platform at the entrance of the hive.

American foulbrood - a brood disease of honey bees caused by the spore-forming bacterium, Bacillus larvae.

Anaphylactic shock - constriction of the muscles surrounding the bronchial tubes of a human, caused by hypersensitivity to venom and resulting in sudden death unless immediate medical attention is received.

Apiary - colonies, hives, and other equipment assembled in one location for beekeeping operations; bee yard.

Apiculture - the science and art of raising honey bees.

Apis mellifera - scientific name of the honey bee found in the United States.

Automatic uncapper - automated device that removes the cappings from honey combs, usually by moving heated knives, metal teeth, or flails.

Bacillus larvae - the bacterium that causes American foulbrood

Bee blower - an engine with attached blower used to dislodge bees from combs in a honey super by creating a high-velocity, high-volume wind.

Bee bread - a mixture of collected pollen and nectar or honey, deposited in the cells of

a comb to be used as food by the bees.

Bee brush - a brush or whisk broom used to remove bees from combs.

Bee escape - a device used to remove bees from honey supers and buildings by permitting bees to pass one way but preventing their return.

Beehive - a box or receptacle with movable frames, used for housing a colony of bees.

Bee metamorphosis - the three stages through which a bee passes before reaching maturity: egg, larva, and pupa.

Bee space - 1/4 to 3/8-inch space between combs and hive parts in which bees build no comb or deposit only a small amount of propolis.

Beeswax - a complex mixture of organic compounds secreted by special glands on the last four visible segments on the ventral side of the worker bee's abdomen and used for building comb. Its melting point is from 143.6 to 147.2 degrees F.

Bee tree - a tree with one of more hollows occupied by a colony of bees.

Bee veil - a cloth or wire netting for protecting the beekeeper's head and neck from stings.

Bee venom - the poison secreted by special glands attched to the stinger of the bee.

Benzaldehyde - a volatile, almond-smelling chemical used to drive bees out of honey supers.

Boardman feeder - a device for feeding bees in warm weather, consisting of an inverted jar with an attachment allowing access to the hive entrance.

Bottom board - the floor of a beehive.

Brace comb - a bit of comb built between two combs to fasten them together, between a comb and adjacent wood, or between two wooden parts such as top bars.

Braula coeca - the scientific name of a wingless fly commonly known as the bee louse.

Brood - bees not yet emerged from their cells: eggs, larvae, and pupae.

Brood chamber - the part of the hive in which the brood is reared; may include one or more hive bodies and the combs within.

Buff comb - a bit of wax built upon a comb or upon a wooden part in a hive but not connected to any other part.

Capped brood - pupae whose cells have been sealed with a porous cover by mature bees to isolate them during their nonfeeding pupal period; also called sealed brood.

Capping melter - melter used to liquefy the wax from cappings as they are removed from honey combs.

Cappings - the thin wax covering of cells full of honey; the cell coverings after they are sliced from the surface of a honey-filled comb.

Castes - the three types of bees that comprise the adult population of a honey bee colony: workers, drones, and queen.

Cell - the hexagonal compartment of a honey comb.

Cell bar - a wooden strip on which queen cups are placed for rearing queen bees.

Cell cup - base of an artificial queen cell, made of beeswax or plastic and used for rearing queen bees.

Chilled brood - immature bees that have died from exposure to cold; commonly caused by mismanagement.

Chunk honey - honey cut from frames and placed in jars along with liquid honey.

Clarifying - removing visible foreign material from honey or wax to increase its purity.

Cluster - a large group of bees hanging together, one upon another.

Colony - the aggregate of worker bees, drones, queen, and developing brood living together as a family unit in a hive or other dwelling.

Comb - a mass of six-sided cells made by honey bees in which brood is reared and honey and pollen are stored; composed of two layers united at their bases.

Comb foundation - a commercially made struc ture consisting of thin sheets of beeswax with the cell bases of worker cells embossed on both sides in the same manner as they are produced naturally by honey bees.

Comb honey - honey produced and sold in the comb, in either thin wooden sections (4 x 4 inches or 4 x 5 inches) or circular plastic frames.

Creamed honey - honey which has been al lowed to crystallize, usually under controlled conditions, to produce a tiny crystal.

Crimp-wired foundation - comb foundation into which crimp wire is embedded vertically during foundation manufacture.

Cross-pollination - the transfer of pollen from an anther of one plant to the stigma of a different plant of the same species.

Crystallization - see "Granulation."

Cut-comb honey - comb honey cut into various sizes, the edges drained, and the pieces wrapped or packed individually

Decoy hive - a hive placed to attract stray swarms.

Demaree - the method of swarm control that separates the queen from most of the brood within the same hive.

Dequeen - to remove a queen from a colony.

Dextrose - one of the two principal sugars found in honey; forms crystals during granulation. Also known as glucose.

Dividing - separating a colony to form two or more units.

Division board feeder - a wooden or plastic compartment which is hung in a hive like a frame and contains sugar syrup to feed bees.

Double screen - a wooden frame, 1/2 to 3/4 inch thick, with two layers of wire screen to separate two colonies within the same hive, one above the other. An entrance is cut on the upper side and placed to the rear of the hive for the upper colony.

Drawn combs - combs with cells built out by honey bees from a sheet of foundation.

Drifting of bees - the failure of bees to return to their own hive in an apiary containing many colonies. Young bees tend to drift more than older bees, and bees from small colonies tend to drift into larger colonies.

Drone - the male honey bee.

Drone comb - comb measuring about four cells per linear inch that is used for drone rearing and honey storage.

Drone layer - an infertile or unmated laying queen.

Drumming - pounding on the sides of a hive to make the bees ascend into another hive placed over it.

Dwindling - the rapid dying off of old bees in the spring; sometimes called spring dwindling or disappearing disease.

Dysentery - an abnormal condition of adult bees characterized by severe diarrhea and usually caused by starvation, low-quality food, moist sur roundings, or nosema infection.

Electric embedder - a device allowing rapid em bedding of wires in foundation with electrically produced heat.

European foulbrood - an infectious brood dis ease of honey bees caused by streptococcus p/u ton.

Extracted honey - honey removed from the comb by centrifugal force.

Fermentation - a chemical breakdown of honey, caused by sugar-tolerant yeast and associated with honey having a high moisture content.

Fertile queen - a queen, inseminated instrumentally or mated with a drone, which can lay fertilized eggs.

Field bees - worker bees at least three weeks old that work in the field to collect nectar, pollen, water, and propolis.

Flash heater - a device for heating honey very rapidly to prevent it from being damaged by sustained periods of high temperature.

Follower board - a thin board used in place of a frame usually when there are fewer than the normal number of frames in a hive.

Food chamber - a hive body filled with honey for winter stores.

Frame - four pieces of wood designed to hold honey comb, consisting of a top bar, a bottom bar, and two end bars.

Fructose - the predominant simple sugar found in honey; also known as levulose.

Fumidil-B - the trade name for Fumagillin, an antibiotic used in the prevention and suppression of nosema disease.

Fume board - a rectangular frame, the size of a super, covered with an absorbent material such as burlap, on which is placed a chemical repellent to drive the bees out of supers for honey removal.

Glucose - see "Dextrose."

Grafting - removing a worker larva from its cell and placing it in an artificial queen cup in order to have it reared into a queen.

Grafting tool - a needle or probe used for trans ferring larvae in grafting of queen cells.

Granulation - the formation of sugar (dextrose) crystals in honey.

Hive - a man-made home for bees.

Hive body - a wooden box which encloses the frames.

Hive stand - a structure that supports the hive.

Hive tool - a metal device used to open hives, pry frames apart, and scrape wax and propolis from the hive parts.

Honey - a sweet viscid material produced by bees from the nectar of flowers, composed largely of a mixture of dextrose and levulose dissolved in about 17 percent water; contains small amounts of sucrose, mineral matter, vitamins, proteins, and enzymes.

Honeydew - a sweet liquid excreted by aphids, leaflioppers, and some scale insects that is col lected by bees, especially in the absence of a good source of nectar.

Honey extractor - a machine which removes honey from the cells of comb by centrifugal force.

Honey flow - a time when nectar is plentiful and bees produce and store surplus honey.

Honey gate - a faucet used for drawing honey from drums, cans, or extractors.

Honey house - building used for extracting honey and storing equipment.

Honey pump - a pump used to transfer honey from a sump or extractor to a holding tank or strainer.

Honey stomach - an organ in the abdomen of the honey bee used for carrying nectar, honey, or water.

Honey sump - a clarifying tank between the extractor and honey pump for removing the coarser particles of comb introduced during extraction.

Increase- to add to the number of colonies, usually by dividing those on hand.

Inner cover - a lightweight cover used under a standard telescoping cover on a beehive.

Instrumental insemination - the introduction of drone spermatozoa into the genital organs of a virgin queen by means of special instruments.

Invertase - an enzyme produced by the honey bee which helps to transform sucrose to

dextrose and levulose.

Larva (plural, larvae) - the second stage of bee metamorphosis; a white, legless, grublike insect.

Laying worker - a worker which lays infertile eggs, producing only drones, usually in colonies that are hopelessly queenless.

Levulose - see "Fructose."

Mating flight - the flight taken by a virgin queen while she mates in the air with several drones.

Mead - honey wine.

Migratory beekeeping - the moving of colonies of bees from one locality to another during a single season to take advantage of two or more honey flows.

Nectar - a sweet liquid secreted by the nectaries of plants; the raw product of honey.

Nectar guide - color marks on flowers believed to direct insects to nectar sources.

Nectaries - the organs of plants which secrete nectar, located within the flower (floral nectaries) or on other portions of the plant (extrafloral nectaries).

Nosema - a disease of the adult honey bee caused by the protozoan Nosema apis.

Nucleus (plural, nuclei) - a small hive of bees, usually covering from two to five frames of comb and used primarily for starting new colonies, rear ing or storing queens; also called "nuc."

Nurse bees - young bees, three to ten days old, which feed and take care of developing brood.

Observation hive - a hive made largely of glass or clear plastic to permit observation of bees at work.

Out-apiary - an apiary situated away from the home of the beekeeper.

Package bees - a quantity of adult bees (2 to 5 pounds), with or without a queen, contained in a screened shipping cage.

Paralysis - a virus disease of adult bees which affects their ability to use legs or wings normally.

Parthenogenesis - the development of young from unfertilized eggs. In honey bees the un-fertilized eggs produce drones.

PDB (Paradichlorobenzene) - crystals used to fumigate combs against wax moth.

Piping - a series of sounds made by a queen, frequently before she emerges from her cell.

Play flight - short flight taken in front of or near the hive to acquaint young bees with their immediate surroundings; sometimes mistaken for robbing or preparation for swarming.

Pollen - the male reproductive cell bodies produced by anthers of flowers, collected and used by honey bees as their source of protein.

Pollen basket - a flattened depression sur rounded by curved spines or hairs, located on the outer surface of the bee's hind legs and adapted for carrying pollen gathered from flowers or propolis to the hive.

Pollen cakes - moist mixtures of either pollen supplements or substitutes fed to the bees in early spring to stimulate brood rearing.

Pollen insert - a device inserted in the entrance of a colony into which hand-collected pollen is placed. As the bees leave the hive and pass through the trap, some of the pollen adheres to their bodies and is carried to the blossom, resulting in cross-pollination.

Pollen substitute - any material such as soybean flour, powdered skim milk, brewer's yeast, or a mixture of these used in place of pollen to stimu late brood rearing.

Pollen supplement - a mixture of pollen and pollen substitutes used to stimulate brood rearing in periods of pollen shortage.

Pollen trap - a device for removing pollen loads from the pollen baskets of incoming bees.

Pollination - the transfer of pollen from the an thers to the stigrna of flowers.

Pollinator - the agent that transfers pollen from an anther to a stigma: bees, flies, beetles, etc.

Pollinizer - the plant source of pollen used for pollination.

Prime swarm - the first swarm to leave the par ent colony, usually with the old queen.

Proboscis - the mouthparts of the bee that form the sucking tube or tongue.

Propolis - sap or resinous materials collected from trees or plants by bees and used to strengthen the comb, close.up cracks, etc.; also called bee glue.

Pupa - the third stage in the development of the honey bee, during which the organs of the larva are replaced by those that will be used by an adult.

Queen - a fully developed female bee, larger and longer than a worker bee.

Queen cage - a small cage in which a queen and three or four worker bees may be confined for shipping and/ or introduction into a colony.

Queen cage candy - candy made by kneading powdered sugar with invert sugar syrup until it forms a stiff dough; used as food in queen cages.

Queen cell - a special elongated cell, resembling a peanut shell, in which the queen is reared. It is usually an inch or more long, has an inside diameter of about 1/3 inch, and hangs down from the comb in a vertical position.

Queen clipping - removing a portion of one or both front wings of a queen to prevent her from flying.

Queen cup - a cup-shaped cell made of beeswax or plastic which hangs vertically in a hive and which may become a queen cell if an egg or larva is placed in it and bees add wax to it.

Queen excluder - metal or plastic device with spaces that permit the passage of workers but restrict the movement of drones and queens to a specific part of the hive.

Queen substance - pheromone material secreted from glands in the queen bee and transmitted throughout the colony by workers to alert other workers of the queen's presence.

Rabbet - a narrow piece of folded metal fastened to the inside upper end of the hive body from which the frames are suspended.

Rendering wax - the process of melting combs and cappings and removing refuse from the wax.

Resmethrin (SBP-1382) - a synthetic pyrethroid insecticide used to kill diseased honey bee colonies.

Robbing - stealing of nectar, or honey, by bees from other colonies.

Royal jelly - a highly nutritious glandular secre tion of young bees, used to feed the queen and young brood.

Sacbrood - a brood disease of honey bees caused by a virus.

Scout bees - worker bees searching for a new source of pollen, nectar, propolis, water,

or a new home for a swarm of bees.

Sealed brood - see "Capped brood."

Self-pollination - the transfer of pollen from an ther to stigma of the same plant.

Self-spacing frames - frames constructed so that they are a bee space apart when pushed together in a hive body.

Skep - a beehive made of twisted straw without movable frames.

Slatted rack - a wooden rack that fits between the bottom board and hive body. Bees make better use of the lower brood chamber with increased brood rearing, less comb gnawing, and less con gestion at the front entrance.

Slumgum - the refuse from melted comb and cappings after the wax has been rendered or removed.

Smoker - a device in which burlap, wood shavings, or other materials are slowly burned to produce smoke which is used to subdue bees.

Solar wax extractor - a glass-covered insulated box used to melt wax from combs and cappings by the heat of the sun.

Spermatheca - a special organ of the queen in which the sperm of the drone is stored.

Spur embedder - a device used for mechanically embedding wires into foundation by employing hand pressure.

Sting - the modified ovipositor of a worker honey bee used as a weapon of offense.

Streptococcus pluton - bacterium that causes European foulbrood.

Sucrose - principal sugar found in nectar.

Super - any hive body used for the storage of surplus honey. Normally it is placed over or above the brood chamber.

Supersedure - a natural replacement of an established queen by a daughter in the same hive. Shortly after the young queen commences to lay eggs, the old queen disappears.

Surplus honey - honey removed from the hive which exceeds that needed by bees for their own use.

Swarm - the aggregate of worker bees, drones, and usually the old queen that leaves the parent colony to establish a new colony.

Swarming - the natural method of propagation of the honey bee colony.

Swarm cell - queen cells usually found on the bottom of the combs before swarrning.

Terramycin - an antibiotic used to prevent American and European foulbrood.

Tested queen - a queen whose progeny shows she has mated with a drone of her own race and has other qualities which would make her a good colony mother.

Thin super foundation - a comb foundation used for comb honey or chunk honey production which is thinner than that used for brood rearing.

Transferring - the process of changing bees and combs from common boxes to movable frame hives.

Travel stain - the dark discoloration on the sur face of comb honey left on the hive for some time, caused by bees tracking propolis over the surface.

T-super - a comb honey super with T-shaped strips supporting the sections to provide more space for bee travel.

Uncapping knife - a knife used to shave or re move the cappings from combs of sealed honey prior to extraction; usually heated by steam or electricity.

Uniting - combining two or more colonies to form a larger colony.

Venom allergy - a condition in which a person, when stung, may experience a variety of symp toms ranging from a mild rash or itchiness to anaphylactic shock. A person who is stung and experiences abnormal symptoms should consult a physician before working bees again.

Venom hypersensitivity - a condition in which a person, if stung, is likely to experience an aphylactic shock. A person with this condition should carry an emergency insect sting kit at all times during warm weather.

Virgin queen - an unmated queen.

Wax glands - the eight glands that secrete bees wax; located in pairs on the last four visible ventral abdominal segments.

Wax moth - larvae of the moth Golleria mellonclia, which seriously damage brood and empty combs.

Winter cluster - the arrangement of adult bees within the hive during winter.

Worker bee - a female bee whose reproductive organs are undeveloped. Worker bees do all the work in the colony except for laying fertile eggs.

Worker comb - comb measuring about five cells to the inch, in which workers are reared and honey and pollen are stored.

Questions or comments should be emailed to Roxie Smith at roxiesmith@psu.edu
Last modified, May 16, 2006

Is Beekeeping for You?

what it really takes to be a hobbyist beekeeper.

I started working with honeybees at 14 years of age. I helped a friend inspect his many hives and even tried some extracting of honey. I was amazed by it and now 30 years later I still am amazed by the fascinating world of the honeybee. But this hobby is not for everyone. Hopefully you will know if beekeeping is for you by time you finish this Novice Beekeeping Course.

Work is a big part of beekeeping. Hive boxes (called Supers) and nearly all hive related parts come in kit form and require assembly. Hours and hours can be spent wiring foundation frames, nailing and gluing boxes, all before you even think of getting bees. I'll be adding box and frame assembly photos and techniques soon to this site. But be assured it can be a lull in your hobby unless you enjoy building and assembly lining projects. I suggest that anyone interesting in Beekeeping should expect to spend up to $500 to get fully setup and running. Equipment is not cheap and bees need to be insured for shipping. Lots of up front costs and modest reoccurring costs for medication and repairs. Your time though is the main source of reoccurring costs. Expect there to be unforeseen circumstances that will require hours and hours of labor on your part. Wintering alone can be costly and time consuming to the hobby beekeeper.

The good thing about Beekeeping today is that it has many NON-BEEKEEPING spin-off hobbies that meld well. I can't get enough of digitally photographing the bees, and I really enjoy writing. With easy point and click software today, anyone can build nice websites with no training in HTML or any other computer language. Again, initial costs can set you back. But there is nothing like having quality equipment that lasts and lasts.

Read my **How Big Should Your Bee Yard Be?** section to determine if you can support bees on your property safely and where to best place them. But you need to be as mentally prepared as you are physically ready. Bees can be very self supportive and you can get lazy about tending to their needs. Letting them just do Bee Things and hoping they survive without human intervention is NOT a way to tend your hives. You need to be interactive with your bees and you need to properly log all inspections and observations.

You do have obligations to neighbors, but most of the neighbor related problems can be stifled by simply educating them on honeybee behavior. I have had several neighbors and all of them have actually ben interest in the bees instead of fearing them. That is a goal I would challenge you achieve. Nothing can be more frustrating than having neighbors that complain all the time.

But that goes for family too! Some people have intense fear of bees and other insects. I could not justify having the bees if they brought a family member discomfort. Luckily my family too are beekeeping savvy. I hope you are starting to see that many issues must be weighed before starting a bee yard. I would only want you t attempt the hobby if you have plans to be active in it. Otherwise, the bees and your neighbors both wont like you very much.

Now enough about your family and neighbors. Is beekeeping for you? It will take time, money and expected loss seasonally. Time can be very consuming when it comes to assembly of boxes and frames. I urge you to assembly line every single job. Get away from doing one, the doing another and then doing a third - complete all three at the same time - just like Henry Ford in auto production.

You really have four basic interests as a hobbyist beekeeper.

- 1) you want to pollinate your home or garden or natural acreage.
- 2) you want to observe bee behavior and even raise queens.
- 3) you want honey for your own or for family, maybe some to sell.
- 4) you want all the above or some other reason similar.

How much work? One colony can keep you active 40 hours a season: Inspection, assembly, extracting and other interaction. Multiply that times you total colonies and you will see that it can be time consuming, but I believe it is time well worth spent.

Medication and treatments are essential to the bees survival. You need to treat them timely and as often as recommended and you must inspect them frequently, especially if you see odd bee behavior. You need to watch them, not just toss a hive out in the yard where it's out of the way. You need to have interest in the hives growth and production. The only way to do this is to visually watch them often, inspect the at least bi-weekly and

always log all your interaction - most importantly, swarming, treatment, feeding, any thing out of the ordinary.

You will be active in your hives survival or you will have a dead colony. Simply put, bees really need us and you need to interact closely with the colonies as each season changes. Nothing is more satisfying as seeing your bees fly in the Spring after a rough Winter. You can achieve that if you are active in this hobby. If not, your success is that of raising a goldfish in a glass of water.

Don't forget too that Swarming is a major concern to your neighbors. I always like to show this photo to new-comers who think that Beekeeping is a "Hands-off" hobby. It is not. This picnic table is my neighbors, the green house in the background mine. They came knocking on my door about 8am after almost sitting down to an outdoor breakfast. Needless to say they ate indoors that morning. Mind you, these neighbors were well informed about my bees and they enjoyed watching me work the hives from time to time. If I hadn't spent time educating them it may have been a disaster. Swarms can be plentiful when a healthy queen, agreeable weather and food is plentiful. One year I had 7 swarms in a matter of weeks, they landed everywhere. It can be a humbling experience to see a quarter million bees bubbling out of the hive and into the air.

So as COOL as this looks, it can be your neighbors worse nightmare. Bees will land on anything that seems capable of supporting their weight and they could be there for days until the scout bees find a favorable home. You need to know that swift response is expected if you hope for friendly neighbors. Just something you need to think about. Not to forget that NO MATTER what swarm lands in their property, you are expected to take it away to a new and happy home. I watch my colonies closely and I know when they are ready to swarm. Many times I've had to capture some stray swarms before and then magically pull a empty super out of my hat. It is time consuming building frames and installing foundation. But today you can order PREBUILT hive boxes complete with 10 assembled frames with wax coated plastic foundation already installed. I can think of a billion things I would rather do then build frames and boxes, but I still feel that I do a better job at assembly then Dadants preassembed hive boxes, but they do a satisfactory job and PREBUILT hive boxes or the complete hive kit which includes telescoping top, inner cover, bottom board and entrance reducer. This complete kit is about $78 and well worth it. All you need (as far as a hive goes) is there. You only need tools and of course

bees.

It is very satisfying to extract honey from well built frames. I do enjoy making my frames, although it is time consuming. I was kinda surprised to see that the Duragild (plastic foundation with bees wax press honeycomb pattern. A well built frame will last many times if carefully extracted. Make all your hives strong with good wood glue and brads. Square-up all boxes and frames and you will inspect and extract easily for years.

I hope I've helped. Beekeeping is not for everyone. You need to know your allergic level and have proper antidote on hand at all times if you are acutely allergic. I have been stung thousands of times, 200 times once in 30 seconds - that one hurt. I could have used an anaphylactic kit, I could feel my chest tightening and I expected the symptoms - so I was not panicking when the effects of the venom hit me.

You need to know, one way or an other honeybees are going to sting you - no matter how well you dress, they always find their way inside your suit or mask. You can drop stuff and make an awful mess of dropped wax, dead bees drowned in honey and a million bees can be upset and flying all around you, enough to freak out the most hardened beekeeping.

Bees let you know they are not happy and willing to defend their home at all cost. They'll smack into you, sting you, buzz you insatiably and do everything possible to annoy you and freak you out.

If you are the average person who has genuine interest in the hobby, then I suspect you will continue beekeeping in some fashion for the rest of your life. Even people who have failed again and again have the desire to improve their skills and increase their knowledge of the honeybee. So even if you only enter beekeeping as an internet student, chances are that you will return to the many thousands of beekeeping sites on the Internet to further educate yourself.

The only question here then is: Is Beekeeping for you? I suggest that you find others who are already active in the hobby and speak to the about their concerns and hopefully they will let you assist in hive inspection or honey gathering as my friend Mike did for me. And If you are bitten by the hobby as many of us are, then you will have something to look forward to for the rest of your life.

Lastly, Beekeeping takes many forms. Look at me for example: I work on my website more than 20 hours a week, often shooting hundreds of photos a week. This is beekeeping to me because I enjoy the educating people part of beekeeping. I love honeybees and have a passion to share their wonder with others. Because of the web, I receive hundreds of letters from around the world from people just like you. I could be a beekeeper without ever having a hive. Beekeeping is inside you, not outside in your yard. Think it through, talk with your family and read all that you can. Let me know if this has helped you in your decision.

Beekeeping is a grand hobby that millions of people world wide enjoy. It's fun to watch then and for many of us it's even more fun to write about. Look at my site, hundreds of hours worth of work compiling writings, images, links and it is my love for beekeeping that keeps me going. Bees sting, but Beekeeping bites you and even if you are only a web surfing hobbyist, make the most of this hobby and learn everything you can about our special little friends.

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Determining the Size of your apiary.

Figuring out the proper apiary for you and your neighbors.

There are several factors in bee yard layout. You must take these factors in account or you could easily starve your bees to death. You need a steady, seasonal influx of nectar and pollen to feed the larva and create a storage of excess honey for Winter survival. In this first photo you will see a wishing well to the center left. Behind there are C1 and C2, my experimental colonies for the 2001 beekeeping season. 12 feet in front of the hive is the sidewalk and mailbox. Directly behind the hive is the property line and my neighbors yard and home. This works well for me because I have followed my own number one rule: teach your neighbors to respect the bees space, but more importantly they should understand the benefits of the colonies to their own plants and trees.

The bees must be busy by nature to stay healthy. A total dead period where there is NO crop to harvest causes poor hive health and irregular breeding patterns. When deciding the size of your yard or the number of colonies, it's important to understand the food sources in you area. A talk with a local beekeeper often will give you an idea of what to expect. Also a local agriculture or county parks department can often answer questions on plant life.

You must think of the hive as a single machine. The queen and workers are uniquely bound in mission to both expand the size of the colony and to also create a supportive food store for the following Winter. It's your job as the beekeeper to make this seasonal transition as seamless as possible. In most parts of the East, we have a lull in nectar and pollen flows during Mid-Summer. This is also the time that most of my bees decide to swarm - thus creating MORE bees to feed in a time when food resources are short. Think of this type of situation and use it to determine hive count on your property.

Swarming concerns and hive division is important too. I have had as many as 7 hives at the same location against my neighbors fence. It didn't start out seven, it started out one hive and a nuc, but good queens can turn your small yard of bees into a small city of bees towering over the picket fence. So don't think that you are ready for every seasons

miraculous events. Honeybees are prolific by nature and they can be a handful to control. Trying to prevent swarming by adding empty supers to the existing hives sounds great, but often require careful observation and sometimes a vacation or a few days of being "Too busy" to work on the hives leads to problems or at least to unwanted spin-offs from the main hives. For more on swarming please read my Swarm capturing section.

I always love emails from people with 20 and 30 acres of land who ask whether that can safely have bees on their property. My property is 110 ft X 60 ft and in the heart of a residential area. My neighbors are fascinated by the bees and their kids know the rules, and stay behind the front gate to watch. But they do watch and quite often. Getting your neighbors involved to some degree, takes the mystery and the fear out of many peoples minds and makes your job as a hobby beekeeper and a good neighbor that much easier.

Yard Size

I live on a relatively small property in central New Jersey. Shown behind me in this photo is my neighbors yard and his driveway. I keep my bees right on the property line and only feet from my sidewalk and mailbox. It's not how much space you have, it's more like how much room you can dedicate to the bees flight zone. Here you see about 20 feet from the neighbor's driveway and the space between the driveway and bees serves as a garden space, so it's rarely walked through. Keeping an eye on the usage of a small property can often tell you if it's a good place for bees or not.

To determine how many colonies I can support, I must look to my local area for viable and seasonal food crops. Luckily here we have several crops that are bountiful to the bees. Here we have blueberry fields and cranberry bogs and also many lily pads to draw nectar and pollen from. All these crops are with in a 2 mile square area, which is very important. Honeybees will travel further, but two miles is a good gauge for the outer travel bounds.

You must think of the bee as a small jet plane using a large amount of it's collected nectar as fuel during the flight. The further away from it's home, the more the bee will consume as fuel during her flight home. Thus, closer crops will yield greater surplus honey. Pollen is different because the bee is carrying the pollen on her rear legs and is burning fuel consumed on the trip, mainly nectar as she packs the pollen on her legs.

She will consume enough nectar to fuel her flight home, but only enough for the trip. Her main concern is the pollen which is packed on her legs and being returned to the hive for

larva food and usually short term food storage. Pollen is yellow, red, orange and sometimes white balls packed on a small spine on the bees rear legs.

Food and Location Concerns

So you need to determine that you have a sunny location that receives early morning sun and a way in which to face the colony East if possible. The reason for this is that bees live in a totally dark environment and use the suns light breaching the hives entrance as a wake up call for morning flight. A colony in a sunny location will have as much as two hour advantage each morning over a colony that is placed in a heavily shaded area.

What does this mean? Well, lets think nectar, the liquid gathered in flowers and plants. This liquid is often a combination of dew and natural liquids found in the flower. In the early morning, the quantity of the nectar is at it's most voluptuous state. As the sun rises and evaporation begins, less nectar can be collected from any source. So the number of trips that the bees make are greatly increased as the normal daily evaporation depletes the amount of nectar available.

This is no more prevalent than in Lily pads. During the morning, the water plants are trumpets filled with large amounts of nectar. By 10 am on a warmer day, there is nothing there to collect. A colony which had an early flight start will have 4 solid hours of collecting compared to a colony that just got started at 10 am, because the sun finally breached the entrance.

Beyond The Hobbyist

The term "Big" is a relative term that can easily be over used here. To many of us, big is a dozen or so hives taking up every square inch of our small yards. To others, big may not begin until a 1000 hives produce 70,000 pounds of honey a season. The important issue is: how big is comfortable and affordable for you.

A small backyard hobbyist (like me) usually has about a thousand bucks in equipment and hopefully all the passion of a big honey producer. The real advantage of a bigger operation is that you can switch and exchange hive parts from field to field and you almost always have bees readily available to rebirth a strong colony. Of course upkeep on

such weather beaten equipment would shock us silly if we ever saw what it takes to be a surviving honey producer in the United States today.

I have a modest 8 supers, 2 queen excluders, a pollen trap and a few feeder jars to take on a whole new season of beekeeping. Please read my digital logbook to follow me throughout the Spring 2001 Beekeeping Season. Many folks buy or inherit hives from family, friends or local beekeepers. I really think that this is a great way to start on a shoestring budget. The obvious caveat is that you might be buying someone else's troubles.

Again, you need to weigh every possible trouble or concern before you jump into beekeeping. Where you will have the hives, how often you can spend with them, is the location a danger to neighbors or pets, what about water concerns and a million other questions should be addressed by you. I hope this has been helpful.

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The Honeybee Queen

a look at an amazing egg laying machine

The Queen is the ultimate egg laying machine and is solely responsible for the 80,000 to 200,000 or so workers and few hundred drones found in a typical established colony. Her life begins much as that of any worker, but it drastically changes when the workers bees decide they need another queen in the hive. There are several reasons a queen could be required during the active season, swarming and replacing the existing queen are two typical reasons.

Just remember that the queen begins her life as another "worker egg" laid by the hives existing queen. With in a few days, for what ever reason, the egg or in some cases the larva of this worker is taken to a special cell called a queen cell and it is there she will develop into a new queen with the help of the workers.

Queen Cell Types

Queen Cells look like a peanut shell and actually are built out and away from the other cells that sit neatly within the frames 1.25 inch thick body. There are two types of queen cells, Superceedure and swarm. They both are cells designed to rear new queens in. Remember, all queens start as normal worker eggs or larva and the only difference is in their feeding and the size of the cell. **Shown here is a queen cell that is fully sealed and only days away from having a queen emerge. Note the peanut shape of the cell and further notice how far the queen cell sticks out from the rest of the cells. Click image for wallpaper sized image.**

Superceedure cells are queen cells found along the center of a given frame. It looks just like any other queen cell. You may see 2 or 3 of these at a time when a FAILING QUEEN needs replacement. It doesn't take workers (or a good Beekeeper) too long replace a queen laying in poor or sporadic patterns or the existing queen may be getting old or has been recently killed and needs replacement as soon as possible. Superceedure cells are made to host a queen that is being raised to REPLACE an existing queen.

Swarm cells are found clinging to the bottom of the brood frame and are used to rear a SECOND QUEEN, needed for flying off with half the hive's population, thus making room for thousands of new bees in the hive. The bees that swarm leave with the new queen - see my swarming section. This swarming is the colonies natural ability to multiple quickly. Each hive swarms several times each season, a healthy hive with a strong queen can swarm 4 or more times in a warm season.

The Emergence of the Queen

Without getting over technical, the queen bees emerge days sooner than the same bees would IF they were left as workers. This comes from a solid feeding of Royal Jelly, a glandular secretion fed to the queen by workers during her larva stage. The new queens are tended to by nearly all the colonies bees at one time or another, this touching of the queens allows her scent, known as a pheromone to pass from bee to bee, aiding them in smooth and logical understanding of their duties.

It can not be emphasized enough that pheromones control positive communication throughout the hive. A dead queen is sure doom to the hive and their attitude promotes even faster decline. Workers stumble around with no clear idea of what their duties are without the queens scent. Of course, they have enough instinctual sense to create a new queen if there are eggs or young larva to work with. If not, the hive will likely perish at the end of the season.

After escaping her peanut shaped cell the queen is cleaned and cared for by a rotating group of worker bees called the queens court. Again, the court is a small collection of the many thousand of bees that live in the hive. Generally, the court is comprised of 2-week-old workers who are nearing the final stage of their lives, the gathering time. But just before they become foragers a 3 weeks of age, the spend time doing housekeeping duties, including tending to the queen.

On her first day as a queen, she will learn the basic layout of the colony, where the egg laying cells are and she will pick up the improved morale due to her successful birth. She is escorted around the hive, and during this time she meets with many of the workers as they frantically clean cells for the expected "egg laying" that the queen will do over the many months and years ahead.

Mating Basics

It isn't until day three that the queen is ready to mate. Her wings are now stretched and strong enough to support her in flight and her mating organs are fully developed and ready for the age-old ritual of mating.

The queen leaves the hive and flies to a height of nearly 30-ft above the hive. Male bees called Drones from other colonies take turns coupling with the queen while in flight until

the queen feels the deed is complete. In that short flight, she would have mated with 10 or more drones and during their coupling, the drones sex organ snapped off and stayed inside the queen until every bit of sperm was transferred. The drones fall helplessly to the ground to die.

The queen returns with enough sperm to successfully lay fertile eggs for years to come. The sperm is kept alive in the queen's body and feed a protein substance produced internally by the queen. She will never have to mate again and she soon will begin laying upwards of 1500 to 2000 eggs a day for as long as 5 years. Making the honeybee queen one of natures most prolific creatures.

Shown in this photo at the center is a newly born queen/ Notice her large, slim body, paler colors and shorter wings. This may sound like it's easy to find a queen, which isn't always the case. Remember, each box has 10 frames and 2 sides with tens of thousands of worker bees busily moving around. It takes a keen eye to pick out an unmarked queen from a hive.

Egg Laying Queens

After mating, the queen goes right to work laying eggs. This is the moment that the workers have been awaiting since the queens birth three days earlier. A typical colony has a death rate of 1000 to 1200 workers a day, due to old age, accidents, attacks, etc.. At this huge depletion rate, and without the constant out put of new workers to tend to in hive activity, eventually all that would exist are foragers and guard bees and without the queen's pheromone there would be no sense or order to any of the hives activities. The hive is literally doomed without a laying queen. **Shown here is a queen laying a worker egg in a very shallow cell that will be built up later by the workers. Queens will lay in any cell that is drawn out - this also gives the workers the incentive to build out the comb quickly. Click on the image for a wallpaper sized version of the image.**

Sometimes, a worker or group of workers will start laying egg. This "half-hearted" game of nature which only produces drones, because the worker bees have incomplete reproduction organs and can not produce workers. The drones are natures way to help other hives survive because it knows that this hive is doomed. So by producing excessive drones, other hives queens have a chance to mate and hopefully THEY will survive, where this hive failed. But, importantly it carries on the bloodline of the colony.

Once the queen has mated she soon begins laying eggs. She will walk over the empty and cleaned out cells, looking deeply in and inspecting each one before she will walk passed the cell and back into the cell to deposit the eggs. The queen is very picky and will not deposit an egg into a cell that was not cleaned to her satisfaction.

The queen backs in to the cell and produces a small sticky substance that the egg will adhere to. The egg is laid at the bottom center of the cell in a standing position. After the egg is laid, the queen moves to the next cell and repeats this process. She will do this more than 1500 times every day for up to 5 years. The queen will take short rest periods of 5 or 10 minutes, but generally speaking lays eggs around the clock.

In the queen's body, the eggs and sperm are kept separate from each other. Remember earlier that I mentioned that the sperm is kept alive by feeding it protein within the queen's body. The queen actually has a small valve that she can control by restriction, which either allows or prevents a single sperm from being deposited on the egg she lays. If the queen lays an egg in a worker cell, she allows one sperm to attach to the egg, thus producing a worker. If the egg is laid and no sperm is attached, it will develop into a drone.

The workers actually determine what type of egg (drone or worker) the queen will lay, by leading her to two different size cells. The large drone cells are usually found in the corners where the pollen and nectar are stored. Drone cells are larger than worker cells because drones are large, almost twice as big as a worker.

Queens can drive you crazy

This short chapter is being added after dealing with the loss of a brand new queen which was shipped with a 3 pound package of bees in the Spring of 2001. Most of my site contains time sensitive material, such as my Interactive Logbook and New Beginnings Project - but some of the information is timeless too. Such is the problems that poor laying or rejected queens can do to your bee yard.

After installing a newly mated young queen to C2 (Colony 2) I gave the colony a few days to release her and the workers did chew their way through the small block of candy and released the queen. All looked good for several days, but after four or five days I checked again and the queen was gone! This has happened to all beekeepers at one time or another, but it's frustrating because usually it happens for reasons that we just can't fathom. Remember that thinking like the bee becomes easier the more you work with bees, but accepting a queen often defies logic.

We can say guess a few reasons for her being killed off, but no one knows for sure which of the reasons the workers acted on. And sometimes, for no obvious reason to the beekeeper, the workers choose to kill off the queen and during the early days of a new colony this can be fatal without intervention.

The most common reason is that the queen was released too early and the workers (who came from hives that had established queens) had not accepted her pheromone scent - the workers still have an allegiance to the old queens pheromone. This allegiance dies off as the workers have no other scent to guide them except this newly mated queen that was shipped with them.

The next common reason is that this new queen lacks a strong pheromone scent and is considered a poor queen by the workers. Often, as bizarre as it sounds - a colony would rather have no queen in stead of a poor queen. In a new colony with no eggs or larva this is a death warrant to the hive.

Please read the installation of the new queen and packaged bee, especially the April 28th Logbook entry and all the May Logbook to see the daily events that followed the loss of C2s queen to see what a back yard beekeeper can do to replace a missing queen if you have another hive to grab eggs from. Otherwise you will be ordering a new queen and having her airmailed ASAP.

Queens are miraculous and fun to watch. I've spent hours looking at the and I never get tired of following them as they search for more and more cells to lay their eggs in. I hope I have given you some insight on the good and the bad of queens. The log entries are great for a real time line. Nothing happens in beekeeping over night. You will find that everything works in specific order and in specific numbers of days.

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Castes:
The many faces of the colony
and communication of a social creature

Overview:

To really understand what happens in a honeybee colony, we must first cover the duties of the players. The colony falls in the family of Social Creatures, meaning they have no self value and work as a whole, much like brain cells and herds of jellyfish do. This instinctual action of totality within the hive is essential to its survival. After a brief look at the individuality duties of the three castes, we will cover how communication plays it's part in the hive.

The Worker Bee

The largest population of the colony is the worker, normally numbering in the hundreds of thousands in an established colony. Many tasks are performed by workers which are necessary for the colonies survival. These duties occur ***relative*** to the bee's age. The freshly uncapped workers perform "In-hive" tasks, such as feeding and capping over larva, storing both nectar and pollen from the foraging bees, returning from the fields, general hive cleaning and much more. Note: all these inner hive tasks are performed in total darkness.

As the worker bee ages, her duties move toward the hive's entrance. She will continue to collect nectar from returning field bees, do guard duties and fan the hive for ventilation. Finally around her third week of life, she will take short orientation flights to strengthen her wings and familiarize herself with the location of her home. She will be fully aware of her homes location and fly miles each day collecting pollen and nectar from plants, trees and flowers. She will literally touchdown thousands of times each day pollinating the fruits and vegetables that we eat.

In her foraging life, a mere 2 weeks, she will fly over 400 miles. Literally wearing out her wings to the point where flying is no longer possible. At this point, only 5 weeks into her short life, the worker bee will walk away from the hive, thus no longer being a burden to the colony. She dies shortly after.

The Queen

The queen is an amazing egg laying machine. She is selected to be a queen when she is either an egg or a very young Larva. Worker bees realize the need for a new queen and they choose several eggs or larva and begin preparing them to be queens. The reason may vary, but generally the colony either has a failing queen, or the colony plans to swarm, or the existing queen was somehow killed. No matter the reason, raising a new queen is a fight against time if the colony is queenless and many colonies have failed in a last attempt at queen replacement.

Visually the queen is very similar to the worker. Her body is noticeably paler though, with less pronounced stripes on the abdomen. Also, she has a bald spot just behind her head on the area called the thorax, where the 6 legs and 4 wings attach. Many beekeepers mark the queen with a colored dot so that she will stand out in the hive. The dot is color coded to show the year the queen was first used.

The queen is fed a glandular substance from worker bees called Royal Jelly throughout her larva stage. The she is sealed up by the workers and 16 days later she emerges a fully developed queen, ready to mate within days.

Somewhere around her third day of life, she leaves the colony to mate with as many as 10 or 12 drones. The mating takes place " in flight " and the drones, who leave their sex organs inside of the queen, die shortly afterwards. The newly mated queen returns home and begins laying eggs at a rate of 1500 to 2500 eggs a day for a period of up to 5 years.

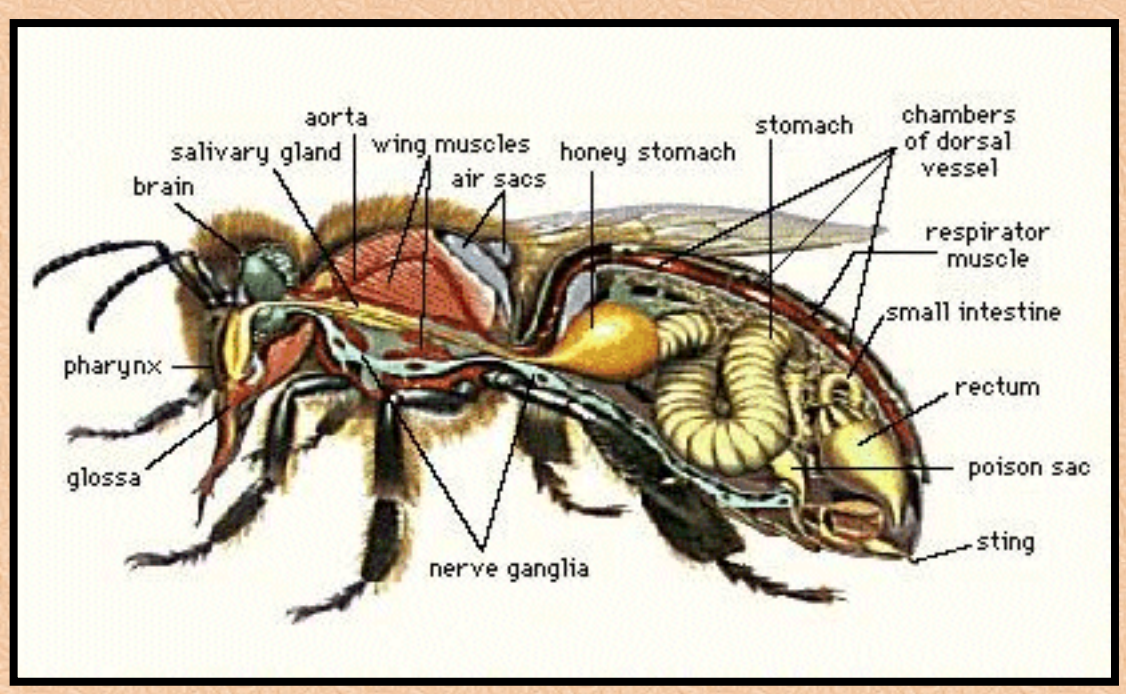
As the queen moves throughout the hive, She encircled by a group of workers known as the Royal Court. The Royal Court actually comprises nearly *every bee* in the colony, each taking turns surrounding and assisting her, feeding the queen, touching her and spreading her scent throughout the hive by rubbing their antennas over the queen. At any time a dozen or so workers will aid the queen, but eventually all the workers make their way to touch and assist the queen in her endless duties as the "egg layer" of the hive.

The Drone

The typical colony has only a few hundred Drones. They are not productive to the colonies survival and are only kept for emergency mating purposes. They are stingless and unclean, fowling the colony with their waste. Workers constantly remove the waste from the hive and keep it extremely sterile. Drones are fat and hairy and nearly twice the size of the workers.

During the Fall, the most bizarre hive activity occurs. Worker bees, which are half the size and weight of the Drones, pick up the larger Drones, carry them to the entrance and toss them to the ground. When the Drones try to return, the guard bees prevent them from re-entering. Eventually they give up and go looking for other colonies and other queens to mate with. The life expectancy of the Drone is one year.

Basic Anatomy of a worker bee.



Without getting technical, after all I'm just a hobbyist, this is the inner workings of the female worker bee. She is a well developed, slim lined, flying machine. Her life is a non stop work adventure, whether tending to the young larva, guarding the hive or foraging.

The worker lives a short life of only 5 weeks during the Summer, but lives several months during the Winter when the queen stops producing eggs. The Wintered workers raise the larva and live long enough for this new season's freshly hatched workers to take over the many tasks. Then these Wintered workers simply die off and completing a cycle that has gone on for millions of years.

Not shown in this drawing is the spined rear leg where pollen is packed for the flight back to the colony. Look at the top of this page for a good view of the pollen spine. Also, notice that the heart runs across the top, and the full length of the workers abdomen. It is shown in read here in red.

Honeybees have 5 eyes. There are three "simple eyes" on top of the bee's forehead, which basically determine where "UP" is, in relationship to everything else. These "simple eyes" really don't see anything.

The other two eyes can easily be seen when looking at the bees. They are faceted and actually see things in 9000 small mosaic pieces. Their brains put the information together to form the simple pictures. A good Beekeeper uses the bee's mosaic vision to the Beekeeper's advantage. We learn early on that slow movements around the bees are hardly notices. It's swift and jerky swinging of the arms that will get you stung.

The **honeybee's antenna** is used for smelling, much like the hairs in our noses. **They have four wings** attached to the same section of the body as the 6 legs - the Thorax.

Observing Bee-havior

The most important part of beekeeping is watching you bees. You can avert lots of trouble by closely observing the activity both inside and outside of the hive. Social creatures behave in predetermined ways that are instinctual, so knowing a particular behavior should also trigger a given response or series of responses. All the activity of your colonies should be logged and carefully described for future reference by you.

Anyone reading the detailed log entries of my Beemaster's Digital Logbook will see that it helps to talk-out the observations. Coming to credible conclusions to particular behavior can often mean the difference between success and failure in Wintering your bees. But conclusions are like belly buttons, we all have one but they are all a little different. Two experienced beekeepers can watch the same behaviors and draw two different conclusions. One will be right and the other will be wrong.

Who is right? The person who better interpreted what they had seen. The success is in the observation and the observation came with experience. But without talking out the observations to yourself or even better sharing it with other beekeepers, you will never draw the right conclusion and your intervention with the hive may not be what was needed and the hive could suffer from it.

I'll cover all the details of observation in its own section soon. But I need you to understand that logging your activity and the behavior of the bees is crucial to the successful raising and over-Wintering of the colonies. More than 40% of colonies fail each Winter across the United States, mostly due to reasons beyond our control. That's 4 out of 10 colonies that we can't save, the remaining 60% is within our control and their success rate is a barometer to our interactiveness with the colonies. Settling for 60% survival is not acceptable either, we should always try to Winter 100% of our colonies no matter what statistics claim.

A Sad Commentary

Nature, evolution and God must be one in the same. To create such a balanced system of animal and insect, plant and air, sun and stars. The oldest recorded Honeybee found is said to have been encased in petrified amber and nearly unchanged from how it look 45 million years ago. This means that the honeybee could go back as far as 200 million years. And our happy little flying pollination machine is one of the few remaining creatures that actually lived during the time of the dinosaurs.

I received an email a while ago. The sender told me that honeybees haven't evolved because God made them perfect. I think that is an excellent thought for the day. They truly are very unique in their abilities. Many insects and birds pollinate crops, various plants, trees and flowers. But the honeybee is a wonder to observe and luckily us humans can interact almost seamlessly into their world.

Without the Honeybee, we too would die off eventually from critically low food resources of all kinds. Without crop pollination, the animals we eat, the fruit and vegetables we consume and the trees we get our air from would all disappear. Honeybee extinction could very well seal our own fate. It wouldn't take many generations for us to disappear either. Easily it could happen in our life time if honeybees are lost to their many parasites, diseases and element conditions. There is a REAL THREAT to the preservation of this important creature and mans intervention is crucial to their survival. Maybe someday, honeybees will have the success that they have had for millions of years.

Interestingly, time is an amazing thing. Very likely honeybees may have bee near extinction a thousand times over these many millions of years. Everything in this world is a cycle. The Sun, the Moon, the Stars, the Ocean Tide, our Heartbeats, the breath we take are all cycles and EVERYTHING in the Universe has a cycle to it and HUMANS have really not monitored MOST of the cycles of our fantastic planet and the bodies we fill.

But every since humans evolved to their place in the chain of command, we have done NOTHING but destroy and later try to repair. Don't put double hulls on an oil tanker, have an oil spill in Alaska in stead. Hind sight has cost us many fascinating species. A list of creatures that will never come within a thousand lifetimes. I can only pray that the Honeybee won't make that list.

Due to Mite infestation of honeybees in the wild, and in beekeeper's fields - nearly all wild honeybees are facing extinction. Except for honeybee farms and the relentless search for a control of these prolific mites, honeybees are doomed to be a protected species, raised and tended to by man. I doubt that we could keep them going another 200 million years.

NOTE:

I do not cover medical treatment of the hives in my course. I am a hobbyist beekeeper and NOT a scientist or professional bee farmer. Soon, I will have a section devote to the treatment of mites, which will a collection of links to articles at the leading Beekeeping On-Line Magazines.

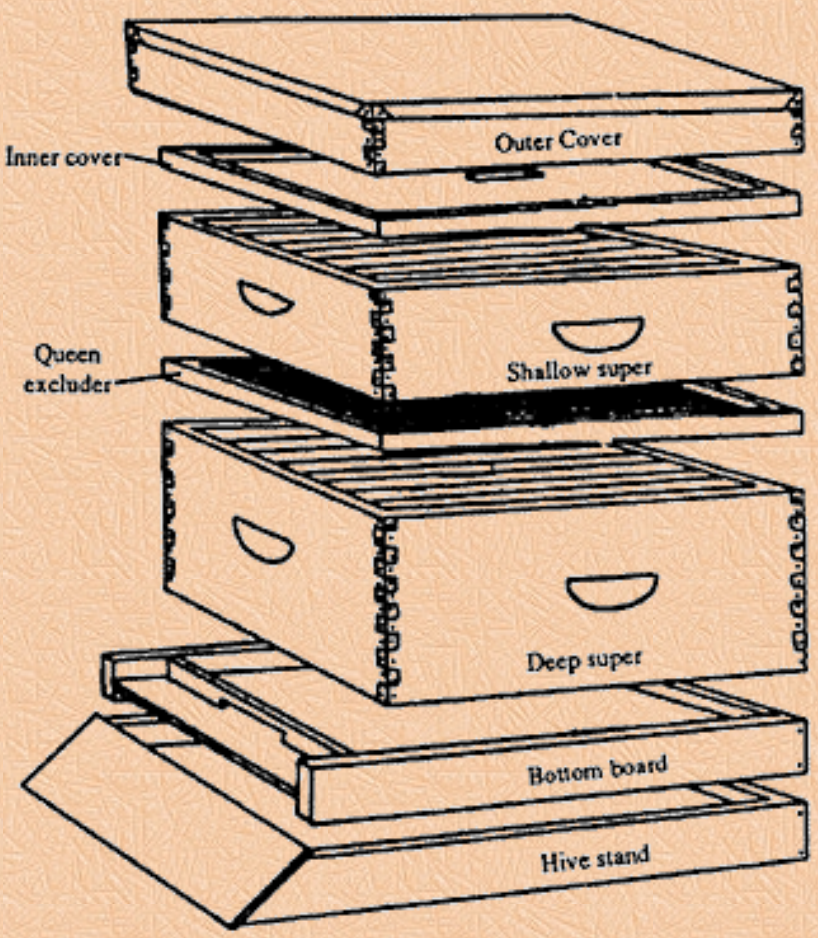
I suggest anyone interested in Beekeeping, no matter what the reason, will find great articles written by the professional beekeepers at Bee Culture Magazine - CHECK OUT their Archives with thousands of articles concerning hundreds of topics.

Beemaster.com

Back to
Beekeeping Course Home Page
email at: john@beemaster.com

Unique Beekeeping Tools

a hobbyist has to have quality tools too



Elements of a beehive

Here is a brand new 2 story high hive with pollen trap and queen excluder. Beekeepers have many tools and lots of stuff hive related. Medications need proper storage, comb foundations have to keep cool. Having Honeybees requires responsibility and caring. More so today than ever before you need to inspect your colonies regularly to make sure that it is not just surviving, but thriving throughout the four seasons. In this section I cover the basics of hive inspection throughout the year.
Assuming you either have a new colony which is settled into a new box or an existing wintered over colony, it is time to check on the early Spring condition of the honeybees. I like to keep records of each colony containing basic information from each inspection throughout the seasons. This way, I can see patterns of improvement or decline in health of my bees.
I am assuming that you are new to beekeeping and this is your first attempt at inspection. I suggest that you have your basic tools ready and have a small logbook and pen handy. The tool list is simple, but necessary for ergonomic inspection. Here are the tools I suggest.

Keeping tools can be tough. They take up lots of space. And you need to keep them away from ants and other critters. I had ants clear out 20 frames of honey in 2 weeks. Over 220 pounds of honey stolen by ants. Then you need to worry about humidity: a smoker can either last forever or for a few years, it's up to you to properly store metal items away from Winter Air, especially in the East where we get Atlantic City Ocean air all the time affecting metals.

Bee smoker and bellows

Nothing is more important than a quality smoker. Choosing one is simple. Buy a good stainless steel smoker with enough capacity (internal space for burning material) so that you don't have to reload during any given inspection. Do not skimp here, your smoker is the difference between a fun inspection and a frenzy of grumpy bees. I keep a cup of sand handy to pour into the smoker after each use - this kills off any flames that remain and eliminate the chance of starting a fire. Clean after each use and store in a dry place.

There are new products on the market that are replacements for a smoker. I've never used them, but they appear in all the major beekeeping catalogs. I'm sure they are safe too. There is something special about lighting the smoker and keeping a mellow burn going all while working several hives. I'll take the old method here.

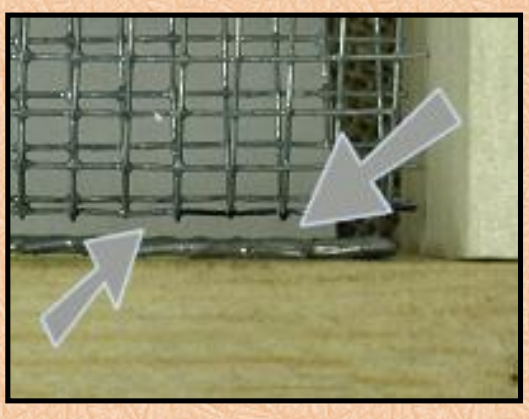
Clean Burlap

This is the fuel for the smoker. There are products on the market today that is safer, longer burning and easier to light. I still use burlap and I find it a good fuel which produces a good quality, low temperature smoke. Be sure that it is clean, free of any oils, greases, paint or other hazardous chemical that will kill the bees. I wash my burlap sacks and air dry them. I cut them into roughly one foot squares, then store them away in a sealable plastic bag. One or two of these squares will give you about 20 minutes of smoke. Always have a handful with you at the hives and loosely pack a few into the smoker when ready to begin inspection

Queen Excluder

Some devices are so simple that you can't improve on them. A strategically placed queen excluder can make your life as a beekeeper much more pleasant. The queen excluder is a sturdy grill like device that is placed between hive boxes. The grids are large enough for the workers to easily pass through, but keep the queen in the box where she is. Note: drones are also trapped by excluders. I like an excluder for a few simple reasons: mainly to keep the queen from laying eggs in a box I want to be honey stores only. Queens will lay eggs anywhere that seems sanitary enough and making her way from box to box often causes you major headaches when extracting. Also, excluders are great for TWO QUEEN colonies. Having two queens is a great way to increase hive population and honey storage

quickly.



Pollen Traps

Look at the small horizontal gap in between the upper and lower wire screen. The square grids are the passage that the workers are forced to pass through, but some will not so this small horizontal gap is the space the bees pass through to enter and exit the hive if they will not pass through the grids. Returning bees who are carrying pollen have to walk across the grating and the pollen detaches, falling to a catch tray below. Ideal for collection pollen with absolutely no effort. A great way to increase the space in your hive for honey storage and a great way to successfully capture pollen is an external pollen trap. The trap is placed between the first and second hive supers and all entrances are closed off. The bees are forced to use the trap to enter and exit the hive. As they walk across the wire mesh surface, the pollen is grabbed and falls free to a clean capture box. Pollen is a great money maker and you will be surprised to see how much the bees bring back to the hive. I like the idea of giving a colony a mid hive entrance too.

This type of Pollen Trap is placed between a bottom super and a top super. Sown here is the top box with pollen trap in place. All entrances are closed and the bees quickly adapt to the new entrance. 4 Long support slats about 1/2 thick form a rectangle and is placed between the hives. The pollen trap is a separate box that fits an opening at the front of the hive. The regular entrance is blocked and the bees soon adapt to the new beeway.

The pollen trap is a hefty piece of equipment that securely hangs between your hive boxes. I will report collection amounts in my **Logbook 2001 Section.**

Barbecue Lighter

I like those long lighters used for lighting barbecues to start the burlap in my smoker. It keeps my fingers away from the fire and and allows me to pump away at the bellows. You can of course use a regular cigarette lighter or matches, but for a few bucks, you'll have this stowed away in your smoker. Matches of course work, but when you have your hands in a pair of leather gloves and honey all over the place, you'll be glad you had something large enough to grab hold of. Besides, matches are a fire hazard. I do keep matches in my smoker, wrapped in burlap just in case the lighter dies..

Leather gloves

Good fitting, long sleeve, vented gloves are a pleasure to use when working with the frames. Don't think that beekeeping ISN'T messy, cause at times it gets down right sticky and dirty. Leather gloves are sting proof and very flexible when properly fitted. They will last for years if properly cared for. You need to clean and wipe the gloves after every use. I wear the gloves and wash my hands under warm water, dry them immediately and then rub them down with olive oil and again remove as much excess oil as possible. Finally, I store them flat in my cabinet. Something to remember: shoot smoke on your gloves to cover any scent that may disturb the bees. Smoke is a great tool, use it always to make your beekeeping enjoyable.

Hood and Veil

When it's time to get down and dirty, you will need a hood and veil. I use a square faced hood that keeps my face plenty far from the screen on all sides. There are many types of hoods to choose from, this is one piece of equipment that you can pick out without any coaching from me. Just find one that you really like and take good care of it.

Goggles

If you don't wear a hood and veil, then I recommend you use goggles or swimming glasses to keep the bees from accidentally flying into your eyes. I've been stung thousands of times and never been stung in my eyes, but I sure wouldn't look forward to it. An ounce of prevention here will give you a great amount of piece of mind.

Frame grabber

A handy too is the frame grabber. It is a spring loaded tool that allows you to grab a single frame with just one hand. It does take a bit of hand strength to hold on for long periods of time, but with just a twist of the wrist, you can see either side of the frame. I like to use the frame grabber for pulling the frames out of the super and for holding them securely as I scrape cappings or remove excess wax. Using the frame grabber can take some hand strength though. You'll need to lean the frames against the hive body occasionally to give your grip a break. But it is very handy to pull the frame free of the other frames without actually getting your hands into the super.

Hive tool
This is a simple pry bar like tool with a notch on one end for pulling nails and scraping cappings. Also, it has a bent lip on the opposite end for prying frames and boxes apart. I've used many different objects, knives, small crowbar, hatchet and almost anything I could get my hands on. But the hive tool is really ideal. It's light, tensiled and perfect for handling with leather gloves on.

Magnifying glass
I keep a quality magnifying glass handy for many reasons. I like to look closely at the bees, inspecting for mites, checking the cells and looking closely at the larva and eggs. Note: be careful not to fry your bees if the sun is above or behind you. I use a large 5 inch glass that I also use when camping: it can start a fire in seconds when the sun is concentrated through it. So becareful where the sun is because loosing a worker is not a big deal, but cooking your queen is a great way to slow down your hive growth really quick. Also, the bees are not as keen on the idea of the magnifying glass as we are. Often, the will get active as light patterns pass over them and as the look through the glass.

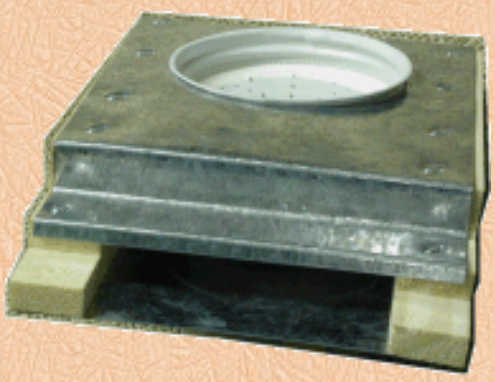
Empty deep box shell
I keep several empty supers handy for several reasons. I often pull several frames out of a hive during inspection and I need a place to put them. The empty super also makes a good stand to place other supers on, thus keeping them off of the ground.

A few strong boards between saw horses work well too. Anything that gets you away from excessive bending is well worth the setup time. Use this space to keep all your tools and hive boxes off of the ground.

Log Book
As with any job, there is paperwork. You will be glad that you started a log book after several months of beekeeping. I have kept one since my earliest days in the hobby. Nothing special is needed, just a simple book with enough room for a few seasons of notes. Of course Beemaster has to be Digital and I keep a detailed **Digital Online Logbook and forum** for everyone to read. I keep the following information in my book.

- Date inspected.
- Number of colonies.
- Number of swarms spotted.
- General health.
- rough poundage of honey in the hive.
- Any signs of disease

- Whether I spotted the queen or freshly laid eggs or young larva.
- Other insects or predators spotted.
- Anything note worthy or different from last inspection.



Entrance Feeders

I highly recommend a quality entrance feeder whenever you start a new colony. Nothing promotes good wax production that an ample source of sugar water. I mix 5 pounds of sugar to 2 gallons of water and I slowly cook the mixture over a low heat to dissolve the sugar fully. Many beekeepers will say it's too thick, others will say the opposite. This combination works for me. I keep the entrance feeders full when starting a new colony and when moving boxes around the yard. If I need to close the bees in for some reason, I keep the feeder in use then too.

Another really good reason to have an entrance feeder is for housing the bees safely during local pesticide spraying. You can easily see the amount of sugar water left and refilling is a piece of cake. Note, the lids tend to rust out after a season of moderate use. I often smell a metallic smell to the sugar water and I carefully inspect and clean the lid. These are standard Mason lids, but the holes are a bit tricky. Keep them "staple hole small" and you'll be ok.

Please check my **on-line log book** to get an idea of the details I keep concerning my hives. The 1999 season was a disaster, I lost nearly all my colonies. This happens and should not be the end of your beekeeping adventure. You are dealing with living creatures that are very dependent on humans today. You should be prepared to have major swings in the cycle of life with your colonies. I've said all through my **Novice Beekeeping Course** that honeybees are facing possible extinction without the intervention of man. Don't give up and with your assistance and a bit of luck, you'll have many many pleasurable seasons of beekeeping.

Having the right tools makes your job a pleasure. Not having the right tools will have you cussing under your breath when 5000 bees are attacking you. I offer a meta-psychical voyage into the proper way to inspect the bees. It should give you some insight to how fluid you should approach the hives. If you are smooth and adequate smoke is use, your inspection should be a fascinating adventure. I promise that honeybees can be pleasant every time if you interact with the bees in THEIR WORLD, not yours. Please read The Tai Chi of Beekeeping section which also has a full description of a weekly inspection of all age colonies.

Preparation for Inspection

Be prepared to spend about 20 minutes to 30 minutes per colony. Have all your tools laid out somewhere that you can get to them easily without excessive bending. I keep a clean trash can handy with a sheet of plywood on top to set all my tools on. This way, I simply move the can from hive to hive and never need to bend over or search for tools.

I choose not to wear a bee suit, this is my preference. I do however wear a long sleeve shirt and long pants. I also wear leather gloves and swimming glasses to protect my eyes. I suggest longsleeve Vented Leather Gloves, they are a please to wear. I have small to medium hands and a medium fits me well. I put both gloves on and rub them together in my hands with a good fregrence free lotion and I work and kneed my hands together and after a few treatments, it will respond to your every touch. Gloves are very importsnt, you receive all of your feedback from your tools using your hands. When using hive tools to pry frames apart, you'll crunch less bees and having a solid grip when you handle frames and boxes.

I don't mind the bees flying all around my face, that's part of the hobby, but I am also very aware that my eyes need protecting against accidental collisions or stings, and swimming goggles offer good protection without being too bulky. But if you carefully interact with your hives, you'll have very little flight, just incoming and outbound traffic.

The Photographic Gallery One

of

John Patrick Clayton

gallery two - gallery three

I offer here a collection of **my best photography**. I captured all these using the Olympus C3000 digital camera. It captures images up to 2048 X 1536 (available upon request) which are poster-sized and ideal for all print media. Here, I offer 1024 X 769 wallpaper sized versions of my work which will be perfect for most of your desktops.

These images are all JPG type and compressed for easy transfer. You will be amazed at the quality of these breath-taking images. Please use them for your computer wallpaper, book covers, educational purposes, etc.. For commercial use, please email for usage conditions, but for private use duplicate as much as you want. Please share my gallery with friends.

What I wish to be unique is a story should aid the photo when necessary. I like to add commentary to let you see as I saw when framing and capturing these images. I offer some insight to shutter speed, aperture and other settings for those who are studying this art form, as I do.

ABOUT MY CAMERA

Making these photos FIT on your screen

Click on Images below
to open 1024 X 768 sized wallpaper images.

This hard working worker bee is gathering pollen from thistle. I chased her for 10 minutes until I got a handful of pics to work with. This was a bee from a swarm I released last season. I took this using 3X zoom - 2ft away, f2.8 and 1/150 shutter.

Gladiolas have very intense patterns link silk sheets. Look for the many shades of purple and white in this photo. Color changes are subtle and the are wonderful to study. This was taken at a local fruit stand. 2X zoom, f4.0 1/125 shutter.

These tiny tiny daises were fun to visually frame. I have several versions of this grouping. I found them next to a dumpster and found beauty in their detail. Here, I wanted the illusion of depth and got it with an f2.8 stop. 3X f2.8 1/250 shutter.

I call this Pecker.jpg, it's a porcelain bird and a branch with natural background. I enjoy the balance of real and surreal. look for more photos of this type to follow. 1X f2.8 1/60 shutter.

Contrast is a wonderful challenge when trying to capture details. I shot this with dozens of f-stops and speeds and this was my best effort without getting too serious. This was one time I wish the Olympus had a higher zoom factor. I 5X f4.0 1/125 shutter.

Thistle is interesting, it has details both close and away from the center. Bees take only seconds to gather pollen here. I just missed the mark in this compression, I have a wonderful 2048 X 1536 version available. 3X f2.8 1/500 shutter.

Catching bees pollinating is a great challenge. Catching her facing right, wings flapping, darting from plant to plant is always a photographers challenge. I have a goal now to capture wing detail, with minimum blur from flapping. 3X f4.0 1/125 shutter.

Composition is always fun when trying to tell more than one story with only one photo. But one story should have more importance. Here the house, although obviously present, gives in to the beauty of the flowers. 1X f4.0 1/500 shutter.

Playing with gamma in my Paintshop Pro toolbox, I came up with this cranberry tone to the image. I like it this way, free of the colors and embossing the work end of collection. 1X f2.8 1/250 shutter.

Here he is, Patches. He and his sister Tux are always ready for a camera shoot. I like this photo because appears to be seeing something that only a kitten could see. 3X f4 1/60 shutter.

Allaire State Park has a wonderful restored village, shops, picnic areas and long rugged trails. This was a moment, free of people, but welcoming in appearance. 2X f2.8 1/250 shutter.

I work here in this geometric nightmare. I took this with minimal lighting and long exposure. It actually added extra depth to the image. 1X f8 8 sec. shutter.

Photo Gallery Two
Photo Gallery Three

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email at: john@beemaster.com

Shipping of the Honeybees

Where to Buy Honeybees and Supplies

Here is a collection of merchants that sell everything related to beekeeping, candle making and other related honeybee equipment. I do not endorse or sponsor any company listed, I only offer these to assist you in your search for equipment and bees. My site is free of advertiser and sponsors and I believe that it should always stay that way.

Dadants is a complete equipment supplier who has everything a hobbyist or professional could possible need. Call and request their free catalog.

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Beemaster's Homepage
Novice Beekeeping Course

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Installing the Honeybees

from shipping box to new home

Honeybees are raised

in farms primarily in the southern United States or the West Coastal area. Bees are delivered in screened in boxes, usually by general US Postal mail. This of course can include air mail too! When reordering just queens, they usually are air mailed to the Eastern Coast. The empty shipping box show here usually contains 2 to 5 pounds of worker bees which are all female, a handful of drones which are male, and a small box called a queen's cage with one young mated queen. Also in the shipping cage is a perforated tin can filled with sugar water. This package usually can sustain the bees for about 10 days if necessary. When calling to order bees, make sure you give them about 60 days to prepare for your shipping. I suggest you have your queens marked and clipped prior to shipping. This is something you can do later when you are comfortable handling a queen in your fingers. Just be ready for the bees when they come. I would suggest you look for your mail person very early - they like to deliver 25,000 live stinging bees ASAP.

A look at the Queen Cage.

Inside the screened in shipping cage are two things. One is a sugar water filled perforated tin can and the other is the Queen's Cage. Most shippers include several worker bees inside the small queen cage for several reasons. The queen in fed her entire life by worker bees. Let's face it, she lays nearly 2000 eggs each day of her life and also inspects each cell before depositing an egg into the cell. She's much to busy to feed herself. The queens and the bees in the main shipping cage are not from a single colony. Rather workers are raised in huge houses or field boxes and literally shoveled into the shipping boxes and weighed by the pound.

Then the mated queen which is sometimes marked and clipped is placed in a Queen Cage - with or without a few workers and sealed in the shipping box with the feeder

can. By time the confused bees arrive at their new home, they accept the queen as theirs by being drawn to her by her pheromone scent.

I have received queens both with and without workers in the cage with the queen. I make it a point to ask the farm whether they ship the queen with workers **inside of the Queen Cage** or is the queen alone in the cage and the workers need to feed her directly through the screen. I choose to have workers packaged inside of the queen cage, because there is less chance of her being tossed around the tiny box and she can safely bounce off workers if the box is jarred heavily. This also allows the queen to receive food from either the small court or the cluster.

Installing the Bees

Every standard honeybee box contains 10 wooden frames complete with wax sheeting called Foundation. These 10 frames fit tightly into the deep bee boxes which are called supers. To start a new colony, just remove 4 frames from the super, remove the lid and feeding can from the shipping box and dump the bees into the super.

Next remove the small cork plug found on the queen cage and have a small wire attached to the non drilled end. Place the rest of the frames carefully back into the super and slide the vertical queen cage between two frames toward the center of the super. I like to put a staple over the wire hanger to make sure it will stay in place. Place the inner cover and lid on the hive and place a feeder bottle at the hive entrance so that the bees can immediately go to work producing wax and filling in foundation to make space for the queen to lay eggs. Check back in a few days to make sure the queen has be successfully removed from the queen cage. This is done by the worker bees eating through the candy plugs in the queen cage. If the Queen is still in the Queen Cage, carefully poke a small hole through the candy, return the cage as you had it and check in another 2 days. The honeybees build up the foundation into tapered wax cells which are filled with, egg cells, nectar, pollen or propolis which is resin collected to seal the box against the weather. These frames are engineering marvels, designed to direct the bees into creating livable space with maximum capacity and the ability for easy removal with least interruption to the colony. By placing the frames tight against each other, the bees will build out the wax while leaving a 3/8 inch walking space between the

frames. This space is known as the bee way or bee passage. Often the workers will chew passages through the frames toward the bottom as additional means of maneuvering.

Many bees will remain in the shipping box. Just place the box on the ground, near the super and the stragglers will move into their new home by nightfall. The only thing left to do is set up a feeder bottle containing sugar water so that the honeybees have a food source and this stimulates cell building. By the following day, the bees will make short orientation flights to familiarize themselves with their new home

The most commonly misunderstood fact is the source of the wax. Wax actually comes from the worker honeybees body. The rear area of the abdomen (the striped area) contains plates which produce the wax. It literally falls off of the bees and is collected, chewed and formed into cells.

Having an alternative plan

in case of bad weather it may be necessary house your bees in your home or warm area for several days or longer. Usually, the post office will deliver the bees as soon as they arrive, so expect to have possession within hours of them reaching your town. You have to expect that a small percentage of bees will be dead. Others will be crushed by the weight of the other bees as they are tossed around in shipping. So seeing as many as a few hundred dead or dying is normal. Remember that workers only live 5 weeks, so some bees in the shipping box are down right old even though your bees were ordered well in advance. It is important to have workers of all ages in a colony at start up since each age group has different instinctual duties. A few hundred dead bees is ok.

If you can not install the bees because of unexpected foul or cold weather, then you need to place them somewhere warm and dark and also keep them fed. I have a closet with wire shelves that I line with newspaper and I place the shipping cage on it. I keep a spray bottle of sugar water handy and spray both sides of the box lightly twice a day.

Make sure that you do not make too thick of a sugar water spray, this can cause the bees pores to clog faster than they can lick off the water and they will suffocate. After spraying them, you will notice they get very quiet as the feed and lick the water from themselves and each other. A good time to re-spray is when the get loud again. When destroying bees, soapy water is sprayed on them, much like sugar water is sprayed on them for feeding. So be cautious when spraying sugar water on them, you could kill your bees.

Keeping the bees inside a few days will not harm them. But remember that each day hundreds more dead or dying bees will fall to the bottom of the cage. And dead bees start to smell and bring sickness to the living after a while. I can not recommend leaving them inside more than 5 days. After that amount of time, make some plans to get them into their new home before you loose the whole shipment.

Upon arrival, the bees should be in a swarm mode, clinging to the top of the box and hanging down in a conical fashion. The bees on the bottom of the cage are usually dead or dying. Per pound, about 100 bees dead is satisfactory. If you see thousands dead or dying, then something happened in shipping that could have shocked the bees.

Examples of shocking

is excessive heat or cold or carbon monoxide poisoning from the mail truck. Direct sun exposure or mishandling or being smothered by other mail packages. Many different scenarios could cause the bees to be damage. If you have a claim, it is with the postal service, not the shipping farm. The bees are certified healthy for shipping and should arrive within a few days healthy. If you have excessively dead or sickly bees, file a damage claim with the post office and notify the farm of the situation. Note: A huge part of the bees cost is shipping charges.

2001 Update - Actual Detailed Installation.

Quick Note about 2001 Season. Follow my Digital Logbook this season as I build a Bee Yard from Scratch. I'll be Rearing Queens with extreme close-up photography. Also some insemination attempts. Expect incredible things this year. Look for photos of eggs, larva and pupa development this season.

2001 Spring will be an amazing time for my website. Armed will my Olympus Digital Camera and my Dell Laptop, I'll be ready for 100 FIELD WORK. Including streaming Realplayer format instructional videos on all these topics. I suggest you check back often and always read my On-Line Logbook.

April 18, 2001

MAJOR UPDATE: The Bees arrived today, 2 days early!!!

First, I was called by a post office 45 miles away saying that the bees had arrived. I asked if they would be in Lakehurst tomorrow, he said yes. An hour later, I got a call saying that the Bees were in Lakehurst. I can see Lakehurst Post Office from my house :)

I picked them up and noticed right away that the FEEDER CAN had been dislodged from it's support. After looking closer, it was the small cross beam (which supports the feeder can) had slipped from its notch and the feeder can fell free. Shown in this photo are my two hive boxes and the 2 packages of bees in their shipping cages.

I am always leery of bare handling packaged bees, especially ones moved around as THESE bees had been over the last few hours. So I broke out the smoker and hit them heavy, then I pried the outer shipping container lid. I tried to replace the support beam and reset the can, but The bees were determined to bubble out of the opening - just like they will do EVERY TIME.

I'll contact Spell Bee about this - I'll use my power (lol) as Beemaster.com to get them to GLUE their supports NEXT time. I don't need a feeder can rolling around and bulldozing over my poor and expensive worker bees.

Just a thought. Lets say 8000 bees per pound TIMES 6 pounds EQUALS 48 THOUSAND BEES: now we take the $92 it cost for the bees MINUS $14.00 for queens EQUALS $78 DIVIDED BY 48,000 equals 1.6 CENTS per BEE. Not bad I guess, especially since they will double in size in about a month.

So tomorrow is the BIG DAY. You will see the photos and read they many updates around my site - including the Installation section, wallpaper gallery, logbook and Newsletter.

April 19, 2001

The Big Day, not the gang bang event I had hoped for, but such is beekeeping in the Early Spring in New Jersey. First, I worked midnight and the outside temperature we recorded at 6am was a ridiculous 31 degrees, with a high of 60 expected. I was beat, as you might have read above, I am working a great deal of Overtime as we burn what fuel my power plant has in storage. I was beat and had little choice but to call Fred and cancel his assistance for the day.

I got home and went right to bed. I got up at 2pm and the sun was out and it indeed was 60 degrees out. I moved everything out into the sunniest and most wind-free area of my yard. It's at THIS point that I feel like I let Fred Down. Now I'm well rested, but Fred is at home 40 miles away.

I will admit, Spell Bee's Italian Bee made the trip well and after being stored over night on my back porch at these cold temps. All I did for protection was place 2 cardboard boxes around the shipping cages and upon opening them at 2pm, they were fine and still clustered tight.

I like to recommend to all of you installing package bees for the first time to try this method of installing the packages. I've read and even participated in shaking the bees from the shipping cage THROUGH opening where the feeder can is placed. The idea is to remove the feeder can and queen cage and then to shake the 3 pounds of bees through this 4 inch round hole.

I changed my mind though and I now recommend you do it somewhat different. Instead of shaking the bees through the top 4 inch hole, I recommend using a pair of pliers to pull thin strips of wood that holds the screen on one side of the cage and carefully fold the screen up and out of the way over the top of the cage.

Now, it's a simple matter of one good purposeful shake and ALL the bees are in the hive. In the older method, you get about 60% of the bees out with the first shake and before you know it, you are shaking the cage like an Etch-a-sketch to get EVERY BEE out of the shipping cage. This later method allows the bees an easy transition without shaking them half to death.

I try my best to give you simple means by which to interact with the bees. Do they remember you being a nice guy or a maniac??? When you come back again to see if the queens were released, will they see you and remember you banging and thrashing them around??? I don't know, but "I REMEMBER" and these bees are here because I choose them to be, and I want them to be productive and happy in their new homes. Anything that I do to the bees should be done purposeful: see my Tai Chi of Beekeeping section if you wish to get a bit closer to nature with your hives.

So I pulled the feeders out the hive boxes. As you read above, on can was free from it's perch and had bee rolling around on the bottom the the shipping cage, but it did little harm. I was able to pull both cans through the holes and then I carefully pulled the queen cages out.

Forgive me for speaking in plurals, but there was really NO DIFFERENCE between either installation, so bear with me :)

They queens looked fine, although NEITHER was marked or clipped as I had paid for. But I was pleased to see several workers packed in the small queen cage with the young queens. I placed the queen cages in the shade while I readied the hives for them.

I removed 4 frames from the center of the super to make room for pouring the bees into the box and stapling the queen cage to the frames. I then removed the thin slats of wood that held the screen tight to the shipping cage and with purpose, I shook the workers into the large opening through the removed frames.

I then pulled the small cork out of the queen cage on the side where the sugar cube blocks her exit. Spell Bee uses a long strap that easily adjusts for placing the queen cage between the frames. Note that the screened section of the queen cage runs parallel with the frames and the candy side is down.

I then slowly replaced the remaining frames back into the colony and evenly spaced them out. I put the package shipping cage on the ground in front of the hive and in no time the remaining bees made their way into their new home. I repeated this process with the other colony too and I placed the hives on their new milk crates, facing the morning sun.

Finally I placed the prepared sugar-water mixture in quart Mason Jars and screwed them tightly onto the caps, then placed the jars into position at the entrance of the hive.

Without getting too detailed beyond what I have written above, that is the basic installation of packaged bees into a new colony. I'll detail some minor, yet important thoughts over the next few days.

By 5pm the bees were already taking orientation flights and some where already foraging. It all goes back to the age of the bees and their instinctual duties. Please see the Study of the Hive section for more info on AGE RELATED activities in the colony.

Rule of thumb is to leave the bees alone a few days, but I have an audience to please and my modest intrusion to their homes will not set them back one bit. By tomorrow, we will be in the hive and we'll find out what 24 hours of hive building can do.

April 20, 2001

It was bitter cold again last night. The temps again around 30f, but the bees were in their home and I was glad that yesterday was cooperative. I looked early in the am (as I pulled into the yard from work) to see bees walking around the entrances and even climbing on the hive front, enjoying the morning sun.

First think I recognized, Colony One (your colony if you are actively following along and interacting with me on this New Beginnings Project) is taking in the sugar water at nearly TWICE the rate of Colony Two: my personal colony. I found this interesting because both hives are identical, 3 pounds of bees, one super with 10 new frames and foundation - note: no drawn comb anywhere prior to installing the bees.

So why the difference of sugar-water consumption? Well, lets assume a few things:

- C1 may have more OLDER Workers, who require FUEL for their foraging.
- also, wax production is higher, because the bees have cells drawn for storage.

April 21, 2001

Quick observations. The weather is quite warm today. The bees are moderately flying, even though just a block away there are trees exploding in pollen. But I tell myself, no need for pollen if there is NO PLACE to store it. Same goes with a queen laying eggs (if they were released yet - which they are not).

The hives MUST secrete and draw comb out from the foundation. By tomorrow I will bet that I find comb being drawn on several frames surrounding the queen.

April 23, 2001

I needed to take some photos and I figured the queens were released by now, so I opened up each hive.

C1 - Colony One (Internet Raised Colony)

- Had ample comb building, stored pollen in a greenish tint and orange colored.
- A sizable amount of sugar-water had been stored on cells that were drawn out at 1/3 rd of it's future length.
- The queen had been released and I spotted her marching around the frame, quite happy and well accepted.
- No signs of eggs yet (of course) the cells are far too shallow and besides, the queen probably emerged from her cage yesterday or probably today.

C2 - Colony Two (my personal hive)

- Similar results as C1.
- The queen was released and she was doing fine.
- Cells were being drawn, nearly as well as C1.
- Pollen, sugar water and comb all over the center frames.

April 26, 2001

Just getting home after a 9 day stretch of midnight's, plus 4 overtimes in ten days. The plant is closed, forever and that's after a 87 year continuous service to the Navy. I'm safe for work (so far) but working for the Federal Government is not a secure place to be these days.

Fred is coming for sure tomorrow!!! I have 14 wallpaper images that give you a real look at how simple installation can be. I will be giving Fred and you the grand tour of the hives and you will see him enjoying Beekeeping for the first time :)

Later today I will be taking some queen photos. I have a new theory on using my zoom and lens aperture I want to test and the Queen is the perfect subject. I want to move out further (to improve clarity) but make up for it using super hi-res capture. I still need to get the macro lens I want, but check out these close-ups and let me know if they look good okay.

Well... Through the magic of the Internet, It's now 10 hours later and I did get to play today with C1. Someone wrote me a few days ago from a middle school in Iowa, she was a 12 year old, 7th grader who basically asked: How fast can a new colony (such as C1 & C2) of bees adapt to hive realignment or augmentation? She was doing a REPORT ON SWARMS and how they respond to several major changes in just a matter of days. Pretty cool project I think!

I also received an email from Dave in Mississippi who asked if it would hurt to collect pollen during the first days of a colony, considering that the pollen is usually meant for feeding larva - and that is many days away because the QUEEN is still in her Queen Cage, there is little comb drawn and still a week away from the first eggs. Very Interesting question too!

I decided to Start a NEW section today called Experiments. These will be short term projects, as well as seasonal studies that have specific purpose. This first Experiment will be a combination of the two emails listed above.

Experiment One

Mission name: Forcing a pollen trap.

- Insert a Pollen Trap on Day 7 of C1.
- Observe bees finding new entrance - nearly 9 inches higher than minutes before.
- Observe bees adapting to pollen trap entrance. Walking over wire grating.
- Collecting pollen for 24 hours - see how much pollen and what colors are collected.
- Restrict entrance at bottom of C1.

All traffic, in and out of C1 is through the pollen trap and NO Feeder Jar for 24 hours. Simple project I admit, but it works. I'm NOT going to put the project details in the Logbook sections, these logbooks are BIG ENOUGH as it is - lol. But I will of course have links all over the place to all the projects. Especially in the Newsletters, Beemaster's Digital Logbook and Beekeeping Course - please bookmark these pages for easy interacting with my daily updates.

April 27, 2001

What a GREAT DAY!!! Fred was at my house at 8am and we sat around catching up with each other. It was cool, so we decided to go canoeing on Lake Horicon before getting in to C1 and C2. The lake trip was fun, we hit every corner and went under the Rt. 70 bridge that comes into Lakehurst from the West.

Afterwards, we had a few burgers and fries courtesy of my Mom who was there to do the cooking and watch us play with the colonies. Fred and I took turns shooting smoke into the hives and he seemed skeptical of handling the bees barehanded - but Fred quickly became a beekeeper this day as he followed the queen in C1 as she searched for spots to lay eggs. And EGG LAYING She is too!!! I found hundreds of eggs, although poor Fred just couldn't find them. I know they were only a day old :)

C1 was building up comb impressively. With ample pollen, sugarwater and nectar stores. The queen was laying well and the colony was very easy too handle. I have to say, both C1 and C2 are very mellow bees still. I've had hives though that did a Jeckel and Hyde thing in only two months. As the hive has greater value to the ever growing colony, it becomes more defensive and it has the power behind it to handle most any attack. Although most bees today are a pleasure to work with with proper use of the smoker.

C2 is NOT doing as well. I need to go back in soon and see if I can find the queen, Fred and I did not and the difference in comb building compared to C1 was very prevalent.

After playing with the bees, Fred and I went bowling and finally gas powered Go-Carts on a real fast and hilly figure eight. It was a great day and I'll have to get all these photos up-loaded. I have dozens and dozens to share and I'm too busy to get them on-line for you.

April 28, 2001

Here we go already. C2 is QUEENLESS. After yesterdays lack of finding her with Fred, I decided to look and no doubt that She is missing. I looked around and of course couldn't find her lifeless body, but I doubt She flew off, more likely She was killed by the workers. Probably from me opening up the colony a little too quickly - Rule One: leave the bees alone for several days when introducing packaged bees and/or new queen.

I rushed it for this project and I think that I am very likely the cause of her death. Just goes to show you that the bees make the schedule, you don't. Work around their instinctual actions, not against them. I now have to make a queen or queens VERY FAST.

C2 is less than 50% developed as C1 - which I think is doing phenomenal. I looked in C1 to see what frame I could rob and sadly the only frame I see eggs on will be the one to transfer, unless I decide to graft, or both.

I will be thinking about this over night. I want to get down and dirty, but I also need to space myself out some. I don't want to generate a mile long log page like this one, but I don't want to break it up into submerges. I think though, that you are enjoying this adventure. Your many, many letters say so and already we are Queenless in 50% of our hives.

Here though were the signs I noted in this log on this page: C1 took in 2X more sugar water than C2. C2 had less drawn cells, and less flight activity. Also, when looking from the top over the 10 frames, I noted that C1 had bees on 5 full frames, while C2 only had 3 frames with bees working.

Lots of signs, simple to spot if you are watching your bees closely. The first two weeks is very important. C1 will have nearly half the box drawn out by day 14. Amazing difference - the sugar water consumed by C1 was 4 quarts (nearly a quart a day) C2 less than HALF of that amount. Again, simple signs.

April 29, 2001

I went into C1 and took a good frame of eggs and placed it into C2. The eggs were very small and probably 1 day old. The queen was spotted on another frame in C1 and She is one prolific creature. More tomorrow.

April 30, 2001

I entered C2 to see if the bees had began building queen cells and WOW yes they had. Two early queen cells were being drawn, one on each side of the same frame. Toward the center of each side as Superceedure is almost always placed. If you enter your hive and see queen cells at the BOTTOM of your frames, that is a clear sign of Swarming. But as expected, the cells were toward the center of the frame and as the queen grows, so will these frames.

The most interesting QUICK Observation from closely watching C1, was to see the queen laid eggs in cells that were barely 1/4 of an inch drawn OR barely 1/4 of it's final depth. Think about it, the workers have 5 days for the eggs to hatch and the larva are very small for a few days, so there is NO HURRY to draw the comb fully out BEFORE laying eggs in to them. This is a great way for the queen to lay maximum amount of eggs in the shortest amount of time. This simple task of building the wax comb around the ever developing egg and larva, makes for fast hive population increase.

Just to let you know: I expect the queens to emerge on May 15 and the first capped pupa on the 8th and first emerging workers on the 19th. These dates are based on my believing the eggs I transferred are only 1 to 2 days old. Most likely only hours old! That's my belief :)

To Continue This Adventure, follow along with my Free Beemaster's Beekeeping Newsletter and my ever-growing Beemaster's Digital Logbook and check back at my Beekeeping Course Home Page.

What is Swarming

Swarming is a natural division of the hives population. When the number of workers exceeds the capacity of the hive, the workers will raise a second queen and she will travel to a new location with half of the colonies worker bees and Drones. Generally this occurs in the Spring or Summer months - 4 to 5 weeks after the queen begins laying eggs after

Winter. Each hive can swarm several times a year, often until August in the Eastern United States.

A new location is picked by scout bees who are workers that are skilled in covert operations. I kid you not, Scout bees will search out the best place to successfully relocate the swarming colony. This is often an existing bee hive in a tree, house or other established location. Important things to the scouts include drafts, accessibility, guard ability, size and location. Often though, a new suitable location is not found before swarming is necessary and the swarm will find unusual places to temporarily stay. This can be on the bumper of a car, around a mailbox, in the lower branches of a tree or as shown in this photo, on the corner of a picnic table. Often, you will find swarms within arms reach.

Often at risk of life and limb, scout bees will infiltrate these other colonies by repeated attempting to breech the hives entrance. After several failed attempts, the scout bee can pick up enough of the hives scent and will be allowed entry.

After looking around and evaluating the strength of this hive and accessing its food stores, the scout will return to the SWARM to announce whether it is worth battling this established colony for sole possession of the hive.

If the scouts argument is strong enough, the swarm will indeed attack and attempt to gain control of the hive and its contents. The swarm in this case, if it wins, also gains control of all existing eggs and larva, which will hatch and be adopted by the swarm as its first offspring in the new settlement.

If the swarm fails in its attempt it may be too weak in number to be a viable new colony. Sometimes it will return to the home colony to reemerge, but this is rare. Fighting to gain the goods of an established hive has its rewards, but most swarms prefer to find a livable location and slowly build the colony back in numbers. Also, returning home to the mother colony occurs within a few days or the scent of the swarm queen will cause the mother colony to treat the swarm as a hostile invader and battle will occur. This is counter productive to the theory of swarming, so thus it is rare.

This single photo gets the most email comments. Yes, honeybees will land on pretty much

anything and it's usually in your neighbor's yard. Again, you need to teach your neighbors to be good beekeeper's neighbors. With a little talking before a swarm happens makes the shock of a ten pound swarm on their property or car bumper. Let them know that swarms happen and when a swarm occurs, invite you neighbor to see how gentle they are. You need to be the WISE OLD BEEKEEPER and NOT the pesky neighbor who has bees next to my swimming pool.

Signs of swarming include seeing excessive bees clinging to the outside of the box, either hanging from the bottom in a conical fashion - which is a very good sign of swarming or covering the front of the box in a scattered fashion, facing downwards and appearing to be overly active and jittery.

Catching Bees has gotten easier with pheromones that can be placed in swarm catching boxes. I'll be using these this Season of 2001, watch as I build up hives quickly. I hope to have a 2 queen hive and a single 2 story colony. I'll be using pollen traps and the close-ups photography will blow you away, I promise. Also, expect queen rearing and maybe some mating photos, cross your fingers.

This latter trait usually occurs when the hives population is so great that the internal temperature of the colony exceeds 95 degrees Fahrenheit even while fanning frantically, which is the ideal temperature for nursing and developing eggs and larva.

It is normal to see many, sometimes hundreds of bees facing the entrance and fanning rapidly to circulate air into the hive. Inside, workers will fan water and nectar to help evaporate it, which also greatly reduces the colonies internal temperature. Also the bees will fan the egg cells themselves. So keep in mind that for ever entrance fanner you see, there are many inside the hive doing similar fanning to control the hive temperature.

Locating Swarms

For starters, lets assume you do not have a swarm yet, but you are looking. Two really great places to improve your chances of getting swarms are 1) advertise in a local news paper that you will remove swarms for free and 2) contact the local police department and advise them of that you are available to remove swarms if they receive calls concerning them in your area.

After finding a swarm the fun begins. But it can also be lots of work. You will need to consider a few important issues before you capture the swarm. Below, I cover all the important things that must be done in order to make the swarms transaction from temporary home to your nuc (5 framed box) or full sized super. Please read and consider whether you are ready for capturing swarms.

Swarms are very gentle because they are homeless and the queen is usually buried deep in the solid mass of bees. They are easily captured and usually accept anything that resembles a suitable home. But keep in mind the immediate needs of the swarm and also time needed to successfully move them to your chosen location.

Capturing and removing Swarms

Once you have received notice that a swarm exists, or if you are lucky enough to find one on your own, then you must make all effort to capture the swarm as soon as possible. Swarms found on branches, bumpers, etc., are just waiting for a better more permanent home to be found by the scout bees. Don't be surprised if you pull up to the yard where the swarm is located, just to find them flying off by the thousands. Trying to follow them once in flight is not an easy venture because often they will travel another mile to their new permanent home and they don't follow roads and signs like you'll have to.

Expect to read about pheromone attractors to catch swarms this Spring 2001 as I start doing a section on capturing swarms in the 21st century. Expect hundreds of photos and wallpaper images this Spring. Beemaster will be back in business again and I will strive to be the LEADING SITE on BEEKEEPING on the Internet.

They tend to stay low, often only a few feet above the ground. But sometimes they will be hanging on a tree branch where a ladder or rope is needed. Lets cover the steps of swarm capturing in some logical order. Remember, swarms are generally docile. This doesn't mean smack them with a stick or shove your hand inside to see if they are solid. It does mean that you can get away with out the full beekeeping garb that you may wear when the bees are having a bad day. I still like wearing my swimming goggles and leather gloves. First, get in close and do a general inspection of the bees. Look for any visible mites or even signs of battle or sickness. Healthy bees are active, even in a swarming cluster and although they seemed relaxed, they should be observant of your presence. If these bees seem to be healthy and worth keeping, then take all effort to handle them carefully - as not to damage the queen, who is likely buried deep inside the cluster. Note: read below if bees seem infected or ill.

After inspecting and accessing that the bees are worth capturing for your bee yard, take a general look around the area directly below the swarm and also check for any obstacles that could be in your way. Direct clearance below the cluster is ideal, but not always available. If possible though create a platform on which to place a cardboard box large enough to hold the cluster.

Place the box below the bees and either sharply shake downward the object, dislodging the bees in one sharp and purposeful shake. Tree branches really are ideal for this, but bees can land on anything. Sometimes you will need to scrape them off and into the box. Either way, getting the majority of the cluster is important.

I keep Nuc boxes handy. These are 5 framed super boxes that are idea for starting new colonies, breeding queens and also used to catch your own swarms. If you do catch your own swarms, you can often re-introduce them into the hive they came from by adding additional 10 frame hive supers on top of the colony. Remember, swarming is caused by over population and giving the colonies more room is a great way to prevent swarming. It's much cheaper to go upwards then to go outwards.

Catch the majority of the bees in the cardboard box. Remove a few frames from the nuc or 10 frame box and dump the bees gently into the hive. Carefully place the frames back into the hive box and cover with the inner cover and lid. Place the hive near the cluster and shake what ever other bees you can on to the ground near the hive.

At this point, it's a time game. You'll notice that the remainder of bees will slowly move their way into the hive. By nightfall, all the bees will be inside and you are ready to move the box back to your yard. Be sure to cover the entrance with a piece of wood that seals in the bees before moving and take precautions that the box cannot spill over or fall out of your vehicle. I always wrap everything tightly with duct tape until I get home.

Watching a Swarm in flight

I've been present for dozens and dozens of swarms and each and every one is as thrilling as the last. I keep a close eye on the hives toward evening. When evening comes and you see bees clinging in unusual numbers on the front of the hive, chances are it is getting ready to swarm. Swarming usually happens in the morning, so I try to check on each of the possible swarming hives and cross my fingers.

Swarms start as a great retreat from the hive and at a massive rate. You will see the honeybees literally bubble out of the entrance as if they were frantically escaping a fire. They immediately take flight and follow the scout bees toward either the permanent home or a local stop-over spot. As they lift from the hive entrance and rise to the sky, the bees make a massive humming sound that can be heard for hundreds of feet. This humming keeps just about every bird or insect away.

The last swarm I watched was amazing. I stood in the middle of the road, in front of my house and 80 thousand bees were swirling in a giant 40 foot wide, 10 foot thick counter-clockwise hurricane - just feet above my head. The sound was incredible. Literally a car snuck up on me cause I couldn't hear it coming. The man must have thought I was nuts just standing there looking toward the sky. He kept driving :)

The bees make this noise mostly through flapping their wings, but 80 thousand bees times 4 wings is a lot of flapping. They were air born for about 20 minutes. They had picked a somewhat camouflaged branch in the tree at the front of my property, about 20 foot up.

First you'll see a handful of workers and the queen land. Then over a 7 or 8 minute period, all the bees landed and were returning together in swarm formation. They were there for three days, then one morning while I wasn't watching, they just flew away to their permanent home. I wish them well.

Nuc Boxes - Starter Hives

I keep several small starter boxes called nucs around. These 5 framed bee boxes are ideal for many chores in beekeeping and well worth making or buying. The photos on this page show one nuc that I built several years ago out of scrap plywood. It has held up fine and I have used it many time.

Here pictured is a swarm captured on my neighbors property. See more about the swarm in the swarm section, linked on the main beekeeping homepage. A Nuc can be used to house a swarm, start a new colony and queen, house frames during hive inspection and many other uses.

Another nice thing about a Nuc is that it makes finding an unmarked queen much easier. Usually, the queen will find her way toward the center frames and workers will store honey in the outer frames for insulation.

This can happen fairly quickly in a Nuc because the bees have no idea how long they will be in this new home. They only know that the Nuc was suitable for the size of the colony. But soon the Nuc will be overflowing with new worker bees as the queen begins laying.

A five framed Nuc, with 3 pounds of bees and a young queen can become over crowded in a matter of two months or less. So as the beekeeper, it is your job to have a suitable standard box set-up for the bees prior to over crowding.

Also, as a beekeeper, you are looking for maximum return for your labor and expense. There are two payoffs: colonies that survive the Winter and excess honey for your own use - in that order. Without the first, this will be your last crop of honey without investing in new bees the following Spring.

Nucs are ideal boxes to produce new queens in. This is a very simple process IF you already have a laying queen in another colony. Simply search in a colony for frames with cells filled with eggs or small larva. Remove the frame with the eggs and a healthy number of worker bees. IMPORTANT: be sure that you don't remove the queen from the existing colony, or you will

make THAT colony raise a new queen instead of the Nuc.

In the Nuc, place the frame with eggs and worker, also grab a frame with honey and place in the Nuc. This is really the minimal requirements to have the workers create a new queen from the eggs you've placed in the Nuc. But I also like to add one more frame, preferably with some pollen or more honey and also two other empty frames, thus filling the box with all 5 frames.

Here is reasoning. When a hive is completely filled with frames, it prevents the workers from building wax except where it should be drawn, on the frames. Random wax can make it nearly impossible to easily inspect the box and frames without destroying the wax cells and killing the bees, even the queen.

Also, By giving the hive a Brood Frame, honey frame and frame with pollen or nectar store, the bees have a good combination of food at hand and can better concentrate on queen rearing and home building. The empty frames with drawn foundation are areas for the bees to fill, so they will quickly return to foraging as well as preparing for the new queen.

I go into queen making elsewhere in the course, but it is a simple principle that worker bees live by, if their are viable eggs in a box, they will prepare and nurture those eggs, larva and pupa into one to three queens. They will not just fly back to the old colony, even if the old colony is just feet away. So just by taking a few frames with eggs in it from an existing hive, you can start a new one. Roughly 21 days from the time you start the Nuc as a starter box, you will have a young queen emerge from her peanut shaped cell.

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Hive Inspection

a trip into your bees world

Fair warnings concerning bee stings.

I am not a doctor. I know NOTHING about medicine. You should have knowledge of how severe a reaction you would have if stung. I assure you that all heck can break loose in a blink on an eye.

I was carrying a deep super filled with all larva, egg cells, thousands of workers and the queen. I lifted the box, began to move it about ten feet away, and it crumbled and crashed to the ground. The box was old and had become brittle at the joints.

Within seconds, I had hundreds of bee stings in my back, neck, face, arms and legs. I walked as calmly as I could away, wishing someone knocked me out with a stick. It was painful, I started feeling anaphylactic shock symptoms and I just rode it out, calmly scraping as many stingers clean against my skin. So don't think that accidents can't happen. I would have given anything that day to have been suited up.

Don't do anything I say because I suggested it here. I am not suggesting that you put yourself in harms way. I'm simply telling you, whether you are fully suited or not, this method of inspection is relaxing and meditative and you will be amazed at how much nicer bees tend to be when YOU are relaxed around them. It's time to begin our journey.

Inspection Terminology

Inspection is a very personal thing. It differs from Beekeeper to beekeeper according to time available per colony and the reason for inspection. Lets say though that you are checking your colonies twice monthly and each time you are devoting all the time necessary for detailing hive activities and maladies. Let's start with a few terms to help you understand what I'm saying in the paragraphs below.

Queen - Long, pale bodies, short wings, slow purposeful movements - rarely seen in established colonies if not marked or clipped. More on the queen.

Queen's Court - an ever changing group of workers that follow the queen, feeding her and assisting her as necessary.

Queen Cells - peanut shaped cells seen either at the center or bottom of frames if new Queens are being made.

Brood - the collective word describing Eggs, Larva and Pupa.

Brood Pattern - in a healthy colony the brood should be contained in a large oval pattern from top to bottom and side to side on each frame. All the cells should be filled with brood of various ages.

Workers - largest population in the colony. Small, aerodynamic, well defined stripes. All duties are preformed by them.

Drones - useless except for mating, these relative huge bees are few in number. Very large, hairy and stingless. They contribute noting to the survival of the colony.

Eggs - small, nearly undetectable to the untrained eye. These swell as they near hatching time.

Larva - the small shrimp like grubs that hatch from eggs. They are ravenous and grow huge in their cells.

Pupa - Larva are sealed over and are then in the Pupa stage. They actually form a cacoon in the sealed cell and chew their way out in to the world as a fully developed bee.

Emerging bees - The young bee chews the cell capping away like a can opener and slowly they pull their way free from the cell. Workers stretch their wings and immediately goes about bee duties.

Dancing - activity seen as a Waggle Dance by workers communication food source.

Guards - workers stationed at the entrance protecting the hive from invaders.

Fanning - workers beating their wings at the hive entrance to cool the hive, or reduce water content in nectar filled cells or evaporate water filled cells for cooling.

Pollen - is the dusty looking powder collected from plants, flowers and trees. It is used as Larva food primarily and is kept around the brood oval for easy access.

Nectar - The liquid gathered from plants, trees and flowers. Combined with other nectar and fanned until it becomes 14% humidity and sealed as honey.

Water - Brought into the hive mainly to be fanned for evaporation and hive cooling.

Propolis - a resin collected from trees and used as insulation to seal air leaks throughout the hive.

Honey - Nectar AFTER it is reduced in humidity and sealed with a capping of wax. Long term food for the hive and for man.

Wax - Fine flakes of wax fall from the adbominal sections of the worker. It is chewed and formed into cells for all hive use.

That should be enough terms to get us through inspection.

Getting started

Normal Inspection techniques.

Smoking the Bees and opening the hive

Keep in mind the following. It is highly recommended that you inspect the colonies on warm and sunny days. The reason: the bees will be busy foraging and a large percentage of bees will be away from the hive. Also, keep to the back or the side of the entrance. Staying directly in front of the entrance will on cause the bees to constantly bump into you as they exit and return to the hive. Activity at the front can be as busy as an airport and you should

always stay out of the way of this traffic.

Dress as you feel comfortable. If I'm doing major hive rearranging then I'm in long pants, long sleeve shirt and eye protection. But generally speaking, I go in with shorts and a teeshirt, bare-handed and just usingieye protection. Most of you will not approach the hive in this casual clothing and that is understandable. For me though, I use this lack of clothing as a constant reminder that I need to be alert and mindful of all my actions movements around the bees. If I were dressed to the hilt, I'd likely spend less time being careful and and more time being clumbsy and inadvertently hurtful to the hive.

After placing all your tools within reach, light the smoker as described above and send several slow puffs of smoke into the entrance of the hive. Wait a minute and repeat this process. Next remove the outer lid and shoot smoke into the hole of the inner cover. Again wait a minute and bellow smoke into the entrance and inner cover.

Each time should be a solid puff of cool smoke. Make sure that all flames are out inside of the smoker and DO NOT pump too much smoke into the hive. The bees should make an effort to clear the smoke, they noticibly will increase their buzzing for about a minute before calming down. Over smoking can harm the bees and larva and hot smoke can burn them. You need to keep the smoke cool and to a minimal when treating the colony during inspection. Over smoking them will result in harming them and may increase their agressiveness, totally the opposite of what we are trying to achieve.

I like to pry all the boxes loose before I start taking the boxes apart. I place the hive tool into the tight spaces between the boxes and slowly press downward, raising the boxes above just enough to break the seal of propolis that usually patches any air leaks within the colony. I don't lift the boxes so high as to let the bees crawl their way toward the openings, to do so will result in squooshed bees and an instant alert mode in the colony.

Remove the outer lid and inner cover, placing them "Bee Side" away from you, but with in easy reach. You will be looking down into the 10 frames of the top box, but for this lesson we are going directly into the brood box. This is a major concern to the beekeeper and the place that all inspections should start.

Remove any upper honey box or boxes and set them aside. You should now be looking into the heart of the colony, the brood box. Of course in a larger colony there could be several brood boxes. If that is the case, repeat these methods for each of the brood boxes and be sure to return the boxes in the same order that you found them.

Get on in There...

I like to take an end frame out of the hive and set it aside, this gives me room to slid the remaining frames around to easily break the wax that binds them together. I then pull a frame from the center of the brood box and I slowly raise a frame so that it about 1 foot from my face. This is where you are going to pay lots of attention and make several mental notes. Later you need to transcribe your thoughts to print - log keeping is eccential to the servival of your colonies. Trust me, a few lines in a simple logbook now will save you hours

of torment later on.

First I look at the general patteren of the brood on this frame. Normal brood patterns from a healthy queen appear oval across the length and heigh of the frame. Noticibly, you shouls see a near perfect oval from top to bottom and side to side with a good combination of sealed pupa, larva of all ages and cells filled with eggs. In each corner of the frame you will see nectar, honey, pollen and water stores - this is perfect text book stuff and immediately I am thinking that the colony is doing fine. I briefly look on both sides of the frame for similar patterns and development and then I go a bit deeper into the cells within the brood pattern.

I want the sun behind me and I want to raise the frame so that the sun shines all the way to the bottom of every cell. Never BREATHE right on to the bees either, they will take off and likely sting you. I am always conscience of my breathing and the roll my physical body is playing. I try to anticipate my next move and slowly move toward it in a mechanical, yet fluid fashion.

I look deep into the cells, looking for eggs which are very tiny and hard for the new beekeeper to spot. But once you get the sun from behind to shine deep into the cell, you should see the tiny "Comma sized) eggs standing up and well centered in each cell. These eggs actually swell as the get closer to hatching, so day old eggs, which are obviously the smallest will be the toughest to see. But please note that any eggs in these cells will alert you that the queen was alive and laying within the last 5 days. This is great news and even if you DON'T see the queen during this inspection, you can assume that she is alive and somewhere about the hive laying nearly 2000 more eggs this day.

Place your protected eyes about 8 inches OR your minimum focus length and pause to let bees regain their footing and they return to bee work. A good cheapy pair of reading glasses can really help you get in there super close. Slowly move your hands from side to side letting the frame move under your vision and carefully, methodically inspect each cell under your vision. Larva is another great tool to use when inspecting brood frames. Larva of all sizes can be seen on an average brood frame. From remarkably small (nearly the size of the swollen eggs) to rediculously big, where they larva almost spills from the cells can be seen. The remaining cells are capped over with a duller golden color and they are filled with pupa, which are only days away from emerging as fully developed bees.

After looking along an entire side, slowly rotate the frame to see the opposite side. The easiest way to turn the frame when using TWO HANDS to hold it is to just flip the bottom over the top, slowly rotate the frame with a flip of BOTH wrists. Again, let the bees get use to being upside down before you move in close, the bees on this side of the frame haven't seen you yet. Always, smooth and purposeful movements.

Approaching the hive

As you approach the hive, slowly move in with your arms in front of you. You want the bees to see your arms as early as possible. No need the all of a sudden being scared by

flaring arms. Squat down to the side of the hives entrance, about 3 feet away. Never stand in front of the hive blocking the entrance during your inspect. I prefer the rear but that is not always possible.

I stand about 10 feet from the hive and watch the bees coming and going. I use a simple formula that a friend taught me, I count the bees coming and going for ONE minute. He said multiply the number times 1000 and you will have a rough idea of the total bee count.

I stand there looking at the hive, focusing at the entrance, almost zooming with my eyes and studying the traffic.

I slowly walk toward the hive, looking out my glasses as if they were a camera lens and my body is the camera dolly, panning and moving as smoothly as a helicopter choreographed to a fine work of mozart. If you think of this as a movie that you are watching and interacting with, the sooner you will become seamless with experience.

Look for pollen on the legs of the returning workers. Colored sacs of bright orange, yellow and red. Look for dead bees at the entrance and dead bees on the ground. Look for normal hive activity, if something appears out of place, remember it for your log.

Lift off the inner cover and slowly place it on top of the stacked empty supers. Shifting your weight, studying the way weight and balance move through your body and be as fluid as possible. You are doing a ballet of sorts. Again, make up your mind WHERE you are going to put something before you remove it. Keep your thoughts, one step ahead of your hands and remove as much lifting and carrying as possible.

Either by using your hands or by using the frame grabber, pull a few frames from the upper box, which should be honey storage only, egg cells will be in the lower box. I mentioned earlier that we are using a queen excluder which is used to keep the queen in the lower box. This is a real handy device for easily maintaining a colony and I recommend a queen excluder.

Pull several frames out, checking to see how much honey your hive has. This of course varies with seasonal changes, how much you've collected for your own use. You can also use a bathroom scale for measuring how much honey you have. Set a brick on the scale and use a hive box sized 3/4" plywood sheet. Place them on the scale, readjust it to zero, then place the super on top of the plywood and log the weight. Otherwise, just mentally. Note: that a full frame is about 12 pounds.

Again look at this side of the frame as you did with the first side. Look at several key frames in the honey box and look at many of the frames in the EGG LAYING bottom super. The queen excluder is marvelous in keeping your queen (thus

eggs, larva and pupa) in the lower box. Keeping ALL honey in the upper box. I really recommend a good queen excluder.

EGG LAYING (Brood) Super

Once you have looked at and returned the honey frames back to the super, place it aside and get ready to inspect the Brood Chamber. This is the most interesting part of beekeeping. Let me try to explain the things you need to do in detail.

At hands length look at the frame and you should see an OVAL PATTERN in the middle of the frame where the queen laid eggs. You will see in that oval space covered cells, larva and if you look DEEP into the cell, you will see the tiny eggs, hanging at the bottom of the cell. It is about the size of a COMMA. You should see lots of each in a good healthy hive.

Look and mentally note how many drones are on the frame. Drones are fat, happy and STINGLESS male bees and should be in relatively SMALL NUMBERS in the hive. Only a few hundred at best in the entire hive.

I suggest you have your queens marked. I don't mark my swarm queens, but I do my surviving queens after a Wintering. I do though plan to mark future queens JUST to make my photography a bit more enjoyable.

It's NOT unusual to NOT see the queen during your inspection. If you do it's always fun to watch her march around. I often see the queen inspecting the empty cell and then dip her abdomen into the cell and lay an egg there. If you don't see her, just make sure you DID see eggs or larva. If you do, the queen was alive just a few days ago and is probably fine.

More to come.

The Tai Chi of beekeeping

more than just a look into yourself

Note: standard hive inspection text included below.

I'm writing this for a dear chat friend Mirandaok. She is the only other person I chat with concerning Tai Chi, Yoga, out of body experiences and meditation. But I know that many other people wish to work closer to their bees WITHOUT the need for excessive sting protection. There is more to hive inspection than ripping them apart and looking for a queen, eggs or honey stores. Here it try to make a unique kind of Beekeeper out of you. I like to call it the Tai Chi of Beekeeping.

It's more of a metaphysical experience than just simply inspection the hives. I have often done practice inspections using empty hives and frames. Carefully honing the proper way to inspect your hives. Here is my method, practice it until you feel comfortable at it. Then, remove your hood and put on simple safety eye ware. Only go as far as you feel safe with. That is why I suggest you use this method. Or at least something that you feel comfortable with that is similar.

Fair warnings concerning bee stings.

I am not a doctor. I know NOTHING about medicine. You should have knowledge of how severe a reaction you would have if stung. I assure you that all heck can break loose in a blink on an eye.

I was carrying a deep super filled with all larva, egg cells, thousands of workers and the queen. I lifted the box, began to move it about ten feet away, and it crumbled and crashed to the ground. The box was old and had become brittle at the joints.

Within seconds, I had hundreds of bee stings in my back, neck, face, arms and legs. I walked as calmly as I could away, wishing someone knocked me out with a stick. It was painful, I started feeling anaphylactic shock symptoms and I just rode it out, calmly scraping as many stingers clean against my skin. So don't think that accidents can't happen. I would have given anything that day to have been suited up.

Don't do anything I say because I suggested it here. I am not suggesting that you put yourself in harms way. I'm simply telling you, whether you are fully suited or not, this method of inspection is relaxing and meditative and you will be amazed at how much nicer bees tend to be when YOU are relaxed around them. It's time to begin our journey.

Getting started

Normal Inspection techniques.

Keep in mind the following. It is highly recommended that you inspect the colonies on warm and sunny days. The reason: the bees will be busy foraging and a large percentage of bees will be away from the hive. Also, keep to the back or the side of the entrance. Staying directly in front of the entrance will on cause the bees to constantly bump into you as they exit and return to the hive.

After placing all your tools within reach, light the smoker as described above and send several slow puffs of smoke into the entrance of the hive. Wait a minute and repeat this process. Next remove the outer lid and shoot smoke into the hole in the inner cover. Again wait a minute and bellow smoke into the entrance and inner cover. After a minute or two remove the inner cover using the hive tool.

Lets assume your colonies are only one deep super in size, meaning your eggs cells, honey stores and queen are all in one single box. This way we can use the most caution when approaching the hive. If you have multi-level boxes, the upper boxes are filled with honey frames and other food sources. A general observation of bee count and overall frame or box weight will give you a good idea on the food stores of this upper box.

The lower boxes are where the brood is found and these boxes are our main concern during inspection. Remove any upper honey box or boxes and set them aside. You should now be looking into the heart of the colony, the brood box.

Inspection of the Colony.

Your bees should be fat and happy and flying about doing their thing. Occasionally you'll get a worker with an attitude who will hound you to death, never stinging you, but flying in your face. Ignore her or go away a few minutes and she'll give buzzing you. Remember, this is your hobby, take your time and enjoy the progress or learn from the problems of your hives.

Using your hive tool loosen a frame toward the center. I like to do this, because it allows me to move two frames after this one is removed instead of one, as would be the case if you were working toward the outside of the box.

Slowly remove the center frame using your gloved hand or frame grabber. Let the bees move down into the open space and crawl onto the frames in the box. A large number of bees will remain on the frame in your hand. They will be busy, adjusting to the bright sunlight and the new orientation of the moving frame. Turn so that the sun is behind you and be careful not to breathe directly on the frame. In the hive your breath and a direct breeze is very foreign to the bees and will cause them to alert.

Look at the frame as a whole. In the corners may be pollen, which are yellow, orange or red filled cells. This is very normal. Also, you may see honey or propolis and even stored water. These are all normally stored products in the hive. The bees keep these food sources near-by for both easy access and for insulation.

Now look toward the center of this frame. Since we removed this frame from the middle of the hive, it is probably a brood frame, filled with egg cells, larva or covered cappings, all filled with developing bees at various stages. The pattern of cells should be uniform and an over all oval pattern of egg cells should cover this frame.

Eggs and queen hunting

The single most miraculous experience you will feel in this hobby is when you look deep into the cells and see the freshly laid eggs. These ultra white comma sized eggs hang upside down from the cells bottom. It is at this point that you know that your queen is probably still alive and well. Eggs hatch in 5 days, so she was alive within the last 5 days.

A good egg laying oval pattern is a good sign of a healthy queen who is able to easily lay eggs in each cell that she inspects and also is taking orders from the workers who are directing her in general egg laying areas.

An out right hunt for the queen is a dangerous thing. Only in the respect that the more you handle your frames, the greater chance that you'll squash her in the process. The Royal Court is very conscience of your inspection and some beekeepers claim that they become tolerant of it after many months of inspections.

This last thought doesn't make much sense considering that they workers on live 5 weeks during the normal season when you would be inspecting. The overlapping of generations of bees would only see you rip apart their home 4 times IF you inspected every week, so I doubt if they actually get use to you.

It's more like they were bred to be gentle through generation of bee farming and if you inspect the colony properly, little actual damage is done. Thus there is little need to attack the inspector - it's more likely they are just fat and happy from the smoking prior to opening the box.

The Tai Chi of Beekeeping

Lets get in to it. I think of inspection as a metaphysical adventure. By going through the steps mentioned above with slow, purposeful movement, you can make an enjoyable flight through a honeybees world. I'm going to get heavy, but I think many people will find there way to this page through search engines looking for Tai Chi. This is for you folks.

I have been doing tai chi exercise for many years, using my own style that I call Free Styling. It's more a mental openness than a desire to perfect. It's not actual formed movements,as is standard taught Tai Chi: more so, it is a fluid movement adventure as you zoom in to the honeybees world.

I often observe the bees from only inches away and it is amazing what you can see. I always wear simple swimming glasses or goggles to protect my eyes, otherwise I am wearing a loose fitting long sleeved shirt and long pants. But I always protect my eyes. Getting stung on your legs is a bummer. I always wear long pants which are also loose. If a bee stings through your long, loose pants, you'll simply pull at the material and the bee and stinger will pull free.

I always setup my tools so that they are nearby and at waist height. No need bending any more than necessary. I Place a 32 inch square 3/4" thick plywood sheet on top of a large plastic garbage can placed in the upright position. I also stack one or two empty supers nearby so that I can stack filled supers up at aist height. Reduce all your bending by having a makeshift workbench and stacked supers makes you Tai Chi experience all the better. If you can move easily from task to task, without bending - you will have less distractions.

The Secret here is to attempt to smoothly move from one task to another, with as little actual stopping as possible. A good example follows, but lets just say that you are a body and spirit in motion. The two can since with each other if you can freely escape the idea that the brain is in charge. I don't enjoy repetitive motion, rather I think of AHEAD of each step of the hive inspection, planning each move like a chess game or a road rally. You need to mentally fly from step to step, shifting weight and thinking of the weight as small air plane flying freely through you and even out away from the body, which is really the goal here.

You really want to think of Tai Chi and even my free style Tai Chi as a mastery of telling the physical body that your spiritual body has a voice of it's own and that it is EQUALLY as capable of manifesting in order for you to both control it and also enjoy it as it plays on it's own. It a very realistic feeling to to the Chi energy away from the body and feeling it fly 20 feet away and then flying back through the body and around elsewhere. Think of a magnetic field, with true weight and tension and elasticity and springy movement. It's as real as the physical feelings we have honed all our lives. We are taught to develop 5 senses and everything else is voodoo and mumbo jumbo. We'll, that is our loss, because

humans are way more capable of experiencing it's potential through such exercises and it is a wonderfully relaxing event.

A voyage into the Meditative Tai Chi world of Beekeeping.

Finally, let's inspect a hive. It's 2 supers high with a queen excluder. I have supplied the hive with ample smoke and five minutes have passed since I first smoked the entrance. I stand about 10 feet from the hive and watch the bees coming and going. I use a simple formula that a friend taught me, I count the bees coming and going for ONE minute. He said multiply the number times 1000 and you will have a rough idea of the total bee count.

I stand there looking at the hive, focusing at the entrance, almost zooming with my eyes and studying the traffic. I breath deeply into my abdomen through my nose and slowly focus on the feel of my breathing, feel the rise of my chest and the expansion of my stomach. I try NOT to breath through my mouth until later, It's a way of using air and the experience of breathing as a catalyst to shoot you deeper into the experience itself.

I slowly walk toward the hive, looking out my glasses as if they were a camera lens and my body is the camera dolly, panning and moving as smoothly as a helicopter choreographed to a fine work of mozart. If you think of this as a movie that you are watching and interacting with, the sooner you will become seamless with experience.

Approaching the hive

As you approach the hive, slowly move in with your arms in front of you. You want the bees to see your arms as early as possible. No need the all of a sudden being scared by flaring arms. Squat down to the side of the hives entrance, about 3 feet away. Never stand in front of the hive blocking the entrance during your inspect. I prefer the rear but that is not always possible. Balance your weight and experience the squatting position as you meditatively watch the bees. Look for pollen on the legs of the returning workers. Colored sacs of bright orange, yellow and red. Look for dead bees at the entrance and dead bees on

the ground. Look for normal hive activity, if something appears out of place, remember it for your log. Slowly stand and again breathing deeply and prepare to watch yourself inspect the hive.

Lift off the inner cover and slowly place it on top of the stacked empty supers. Shifting your weight, studying the way weight and balance move through your body and be as fluid as possible. You are doing a ballet of sorts. Always observe yourself as if Out of Body and you will be on the right track.

Either by using your hands or by using the frame grabber, pull a few frames from the upper box, which should be honey storage only, egg cells will be in the lower box. I mentioned earlier that we are using a queen excluder which is used to keep the queen in the lower box. This is a real handy device for easily maintaining a colony and I recommend a queen excluder.

Pull several frames out, checking to see how much honey your hive has. This of course varies with seasonal changes, how much you've collected for your own use. You can also use a bathroom scale for measuring how much honey you have. Set a brick on the scale and use a hive box sized 3/4" plywood sheet. Place them on the scale, readjust it to zero, then place the super on top of the plywood and log the weight. Otherwise, just mentally. Note: that a full frame is about 12 pounds.

Getting On in There...

I slowly raise a frame so that it about 1 foot from my face. I want the sun behind me and I want to raise the frame so that the sun shines all the way to the bottom of every cell. Never BREATHE right on to the bees, they will take off and likely sting you. I am always conscience of my breathing and the roll my physical body is playing. I try to anticipate my next move and slowly move toward it in a mechanical, yet fluid fashion.

I look deep into the cells, looking at pollen, propolis (Resin from trees, used as hold insulation) and water or eggs or larva. What ever type of frame, whether it is egg cells, larva or just solid honey - I always pay attention to what is in the cells. I closely Look for

dead bees, irregular laying patterns of eggs by the queen, mites, wax moth, invadator insects, drone count and Other stuff. The inspection is a very important thing and perfect for tai Chi exercise.

Place your protected eyes about 8 inches OR your minimum focus length and pause to let bees regain their footing and they return to bee work. Slowly move your hands from side to side letting the frame move under your vision and carefully, methodically inspect each hive or area of cells. After looking along an entire side, slowly rotate the frame to see the opposite side. The easiest way to turn the frame when using TWO HANDS to hold it is to just flip the bottom over the top (rotate the frame with a flip of BOTH wrists. Again, let the bees get use to NOW being upside down.

Again look at this side of the frame as you did with the first side. Look at several key frames in the honey box and look at many of the frames in the EGG LAYING bottom super. The queen excluder is marvelous in keeping your queen (thus eggs, larva and pupa) in the lower box. Keeping ALL honey in the upper box. I really recommend a good queen excluder.

In the EGG LAYING (Brood) Super

Once you have looked at and returned the honey frames back to the super, place it aside and get ready to inspect the Brood Chamber. This is the most interesting part of beekeeping. Let me try to explain the things you need to do in detail.

At hands length look at the frame and you should see an OVAL PATTERN in the middle of the frame where the queen laid eggs. You will see in that oval space covered cells, larva and if you look DEEP into the cell, you will see the tiny eggs, hanging at the bottom of the cell. It is about the size of a COMMA. You should see lots of each in a good healthy hive.

Look and mentally note how many drones are on the frame. Drones are fat, happy and STINGLESS male bees and should be in relatively SMALL NUMBERS in the hive. Only a few hundred at best in the entire hive.

I suggest you have your queens marked. I don't mark my swarm queens, but I do my surviving queens after a Wintering. I do though plan to mark future queens JUST to make my photography a bit more enjoyable.

It's NOT unusual to NOT see the queen during your inspection. If you do it's always fun to watch her march around. I often see the queen inspecting the empty cell and then dip her abdomen into the cell and lay an egg there. If you don't see her, just make sure you DID see eggs or larva. If you do, the queen was alive just a few days ago and is probably fine.

More Later

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Honey Bee Diseases and Pests

NOTICE: the following is a reprint from an unknown source, but it will give you an idea of the many enimies to the honeybee. To the author (obviously from Georgia, USA) thank you.

Honey bee brood and adults are attacked by bacteria, viruses, protozoans, fungi and exotic parasitic mites. Additionally, bee equipment is attacked by other insects. Disease and pest control requires constant vigilance by the beekeeper. By law, all colonies in Georgia must be registered with the Georgia Department of Agriculture.

American foulbrood (AFB) is a bacterial disease of larvae and pupae. The bacteria form highly persistent spores that can be spread by adult bees and contaminated equipment. Infected larvae change color from a healthy pearly white to dark brown and die after they are capped. Cappings of dead brood sink inward and often are perforated. Check for AFB by thrusting a small stick or toothpick into the dead brood, mixing it then withdrawing the mass. Brood killed by AFB will be stringy and rope out about inch. Colonies with AFB must be burned by a state bee inspector. The State of Georgia pays beekeepers a monetary compensation to help replace the loss. To prevent AFB, feed colonies the antibiotic Terramycin® according to label instructions in early spring and fall. Allow at least four weeks from the last Terramycin® treatment until the first nectar flow.

European foulbrood (EFB) is a bacterial disease of larvae. Unlike with AFB, larvae infected with EFB die before they are capped. Infected larvae are twisted in the bottoms of their cells, change to a creamy color and have a smooth "melted" appearance. Because EFB bacteria do not form persistent spores, this disease is not as dangerous as AFB. Colonies with EFB will sometimes recover on their own after a good nectar flow begins. To prevent EFB, treat colonies with Terramycin® as described above.

Chalkbrood is a fungal disease of larvae. Infected larvae turn a chalky white color, become hard then turn black. Chalkbrood is most frequent during damp conditions in early spring. Colonies usually recover on their own.

Nosema is a widespread protozoan disease of adult bees and is especially common in north Georgia. In spring, infected colonies build up very slowly or not at all. Bees appear weak and may crawl around the front of the hive. Discourage nosema by selecting hive sites with good air flow. Damp, cold conditions seem to encourage this disease. Treat nosema by feeding the drug Fumidil® B in sugar syrup in spring and fall. Do not feed the medication immediately before or during a nectar flow.

Wax moths are a notorious pest of beekeeping equipment. Adult moths lay eggs near

wax combs, then their larvae hatch and begin burrowing through the combs to eat debris in the cells. Moth larvae ruin combs and plaster them with webbing and feces. Honey bees are usually very good at protecting their colonies from moth larvae. If moth damage is found in a colony, there was some other problem (usually queen loss) that weakened the colony first. Moth damage is most common in stored supers of comb. Protect stored supers by stacking them no higher than five hive bodies. Tape shut all cracks, put paradichlorobenzene crystals at the top of the stack and cover the stack with a lid. Replenish the crystals as they evaporate.

Tracheal mites were first detected in Georgia in 1986 and have since caused high colony death rates throughout the state. The microscopic mites enter the tracheae (breathing tubes) of young bees. Inside the tracheae, mites block air exchange and pierce the walls of the tubes to suck blood. Symptoms resemble those of nosema. Bees become weak, crawl at the hive entrance and sometimes uncouple their wings so that all four wings are visible. Colony death rates are highest during winter and early spring. If you suspect tracheal mites, see your county Extension agent for help in diagnosing the disease. Infested colonies are treated with Miticur® or special formulations of menthol.

Varroa mites these mites are about the size of a pin head and are copper in color. Female mites cling to adult bees and suck their blood. Females then enter a bee brood cell and produce several offspring which, in turn, suck the blood of the developing bee. Infested colonies almost always die within three to four years unless they are treated. Colonies are treated with Apistan®, a formulation of fluvalinate. Because tracheal mites and Varroa mites are newcomers to the United States, control technology is rapidly changing and has not been well worked out. See your county Extension agent for the latest information on mite control.

Wax Moth Damage

Winter 1999-2000

On February 15th, 2000. Colder than average Winter Temperatures and more than a foot of snow over a three day period, left my hive covered and cold. I found the only box to have live bees was the small 5 framed nuc on the lower right of this photo. About 10,000 workers and a healthy queen.

The center box was filled with Wax Worm and wax worm larva. Also pounds of worthless silk where healthy wax and honey were a few months earlier. These Wax Worms drove the honeybee from this home, obviously because the colony was weak.

Hind sight reminds me that in early October, I notice a swarm. This is rather unusual in the Eastern United States so late in the Season. I had only seen the end of the swarm, after the bees had landed on a temporary branch, just outside my view. I couldn't image a queen producing enough workers to warrant a swarm in October.

I really shrugged this off and shouldn't have. If I was aware of Wax Moth in this colony, I could have taken methods to find this refugee band of bees a new home. Even as important, I could have salvaged about 80 pounds of honey which *that hive* had in Mid September. The easiest way to prevent Wax Moth is to keep strong, healthy colonies. I was more concerned with producing swarms and due to family matters, my bee yard had been poorly managed at seasons end.

Close ups to the devastation

Look here. You are looking through a Frame which was filled with honey only a few months ago. Now the wax is gone, as is the honey and all the bees. This is common with Wax Moths IF the colony is not strong enough to fight the Wax Moth off.

Normal wax to the left, totally eaten and destroyed by the wax moth in the middle. The honey and wax was consumed and (to the right) you'll see dead moth larva in the silk which they spin throughout this hive.

The Silk is worthless and the hive was devastated by the Wax Moth. The moths die when exposed to very cold temperatures for several days. I can't say that I'll miss them.

Here is a close-up of the WAX MOTH LARVA on top of these frames. Notice the silk casings and the mess they leave behind.

This was a healthy hive over the Summer, then one day - all the bees just flew off in early October. The wax moths had probably won this hive because the bee colony was weak in number, possibly lacking a queen.

After the destruction of the Wax Moth, there was really nothing to save throughout this entire colony.

This was a bad Winter all around my Apiary. Check my beekeeping log for further details concerning my bee yard as time goes on.

Beemaster's Homepage

Novice Beekeeping Course

john@beemaster.com

Beekeeping Lecturing Guide

some tips and techniques to help you sucessfully speak to crowds.

Sample Letter

When you feel ready to attempt lecturing or if you need a template to structure your event, then this should aide you in prepare for the show.

Setting Up Stations

Get an idea of the lecture room layout and then draw the best layout and use of room space. Lots of design flow ideas.

Displays

You will need a number of display items, these are HANDS-OFF items. Meant to be seen and not touched. These are honey jars, filled comb, table-top billboards, etc..

Props

Beekeeping equipment is ALWAYS good for HANDS-ON activities. Here are many good tools and how to make use them. Kids love leather gloves, suits, hoods, smokers and other safe objects.

Photography

I offer you lots of photos that can be either displayed by monitor or printed for display purpose. I offer her tips on photography and links to my wallpaper gallery.

Handouts

I always have the schools photocopy several handouts that I put together. I supply the origins and have them copied before class. Always include email addresses on your hand-outs.

Speaking

Eventually, you will speak to the crowd. I never suggest going beyond 35 to 40 minutes. You should have enough props and displays to entertain the audience while you are NOT talking. Here is a good flow chart to use a a lecture template.

Juggling your crowd

I've lectured to hundreds of people and each time it is challenging and always thrilling. Managing the audience is the job of your assistants and overseen by you. Here is how to keep control of the room and still have enough time to enjoy it yourself.

Lecturing about beekeeping

is to me the most enjoyable part of the hobby. For years I have tried to perfect an effective way to entertain many dozens of people or students at once. I quickly learned that you need to set up stations, photo displays, tools and hive parts for hand-on props, observation hive (when allowed) lecture area, etc.

I always request "helpers" when lecturing at schools. Often 3 or mores student assistants will be needed, one or more assistant for each station. With all these helpers, I can spend time with those wanting to hear me speak, meanwhile those wanting to do other things are off doing things that better interest them. Everyone is happy. So let me suggest a few stations and how I would lay out the different materials or props. I'll also include a standard letter that I send to schools when arranging to lecture. This will better explain how I prepare for students.

First, anyone who is listening to you lecture is a student, to one degree or another. If they go away with anything new knowledge about honeybees than I was a good teacher. Hopefully, you will leave a great impression and the following year you'll be back again with all new students.

Many beekeepers ask whether they should lecture EVEN THOUGH they are only hobby beekeepers - often with only one or two hives. I always tell them that they have a moral obligation to the hobby to improve understanding of the sad state in which honeybees barely survive today. Any information that they can pass on to others is worth your effort to put a lecture together.

Schools, libraries, senior community centers, agricultural centers, county parks department, etc., are all good places to hold a lecture on practical hobbyist beekeeping.

Here is the sample letter I send to schools, you would slightly modified this letter to meet the needs and expectations of your audience. Bellows sample letter is for a full day with students from different grade levels between Kindergarten and eighth grades - spending a full 35-40 period with them.

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email at: john@beemaster.com

Extracting using Hand Operated 2 Frame Spinner

and the Email that suggested this page.

Note: This is Fred, my young friend and helper. He is working my antique extractor that I bought from my own beekeeping mentor Mike. Read about Fred and my adventures in my logbook sections.

Here is a FRIGHTENING LETTER I received by Email. This poor Fellow needed a fast reply. With hind site THIS is a humorous story, but I feel sorry for the poor bees spinning at about 8 G's in the Extractor :) Just one more quick note, remove all your bees from the frames before you uncap the cells - sounds silly??? Read on.

Dear Beemaster;

I'm a real novice, having kept hives only 2 years. You mentioned in your newsletter, to suggest subjects that would be helpful in one of your newsletters or logbook.

The most difficult thing for me has been unloading the honey from the frames. I seem to be all thumbs. I have the hand cranked centrifuge etc. but literally thousands of bees get killed in the process as I scrape then away while uncapping then spinning the frames and they keep clogging up my drain valve in my extractor. A "HOW TO" with pictures would be most helpful, cause I know there must be a better way.

Below is my reply to him. This should help some people, who have never used a hand operated centrifugal extractor before. These simple techniques work well for me.

To Novice with Bees spinning out of control:
I use a hand powered 2 frame centrifugal extractor myself. You CAN use it properly without damaging bees or the delicate wax foundation in the frames.

When you remove your frames from the hive, first use a soft brush to remove most of the bees and do it over the open hive so that most of the bees fall back in to the hive. Then place the "bee free" frames away into an empty super for easy carrying or stand them up against something.

As night falls the stragglers will fly home, leaving you with no bees on your frames and then the frames can be uncapped by scrapping off the outer cappings to expose the honey using an uncapping knife or similar tool. I like to use a cake spatula heated with a small propane torch, this simple combo allows me to control the heat and minimize the need for electrical cables, but any manor that exposes the honey cells will do. Tools for this are not cheap, electrical uncapping knives can set you back a hundred bucks. They are convenient and they work really good, but the beekeeper with one or two hives will not get their moneys worth out of in for many seasons.

Remove the wax capping into a container and place the uncapped frames directly into the spinner. To reduce the mess of having honey every where, only uncap the frames you plan to spin. Note that honey gets on everything and it's a mess to clean up. Keeping your uncapping area small helps keep the mess down.

NOTE: different frames weigh varying amounts, some are as much as 6 POUNDS heavier than the other. Try to get TWO FRAMES that are equally

heavy so that they will balance in the spinner. Frames of different weight will bounce around like a washing machine out of balance and be near impossible for one person to spin.

Place the frames in the spinner ands start turning slowly, building up speed, just until you see fine threads of honey flying on to the inside walls of the extractor. This is about the speed you'll need to maintain with a full frame. Continue turning the handle, but only try to spin out about 1/3 rd of the honey from this first side.

You need to keep in mind that frames are delicate and over spinning can BLOWOUT the wax and destroy the delicate comb. Mind you, the bees can fix this comb usually, but it is labor intensive and totally unnecessary.

After removing 1/3rd of the honey from the first side, turn the frames around so that the sides that spun out are now facing toward the center of the spinner. Do this so the other side can get some honey out too.

Again slowly build up speed, tossing about 2/3rds of the honey out this time and again, turn the frames around. This time spin out all the contents, but DON'T over crank or the wax could crack and blow apart. Finally, rotate the frames one last time and spin until empty. If you hold this frame up to the sun or a bright light it should now appear empty and it will feel extremely light.

You can now return these frames to the hive for use in the honey box or brood box. Then scrap the walls of the extractor with a rubber spatula and open the drain valve to let the honey flow into containers.

You can let the honey naturally settle and any wax will float to the top in a few days. Clean your extractor good, cover with a tight fitting plastic bag and keep it where it will be away from any chemicals, fuels or pesticides.

Installing the Bees

A quick look at installing honeybees from packages

International Beekeeping Forum - nearly 30,000 messages posted

This example uses hives which have been split from other hives - they have frames with drawn comb and some honey also, but the installation is the same if you have frames with only foundation. I set up the top supers, which are half filled with honey on my side walk, placed the removed frames from the bottom supers and the packaged bees their while I readied the bottom boards and brood supers. I used the smoker to get them a bit better in the mood for the installation.

I brought over a shipping cage and took off the top board holding the feeder can and queen cage off. I carefully took out the queen cage, inspected it to see she was fine and removed the small cork that would prevent the workers from chewing their way into the queen cage to get her out too soon.

I temporarily covered the entrance where the queen cage was pulled out from the shipping cage and placed the queen into the comb-less foundation - due to the ridiculous metal strapping used to attach the queen cage to the frame - I prefer nylon straps that allow you to further drop the queen cage further into the hive that at the very to as shown in the photo.

I removed the side and bottom wood rails that held the cage screen in place, rolled the screen upwards out of the way and banged the shipping cage DISLODGING most of the bees in one good plop into the hive through the few frames I had removed. I shook out any remaining bees easily without having to force them through the small feeder can hole. This keeps the bees very calm and they will go right to work,.

I replaced the frames into the hive and returned the second story high super into place. As you probably noticed, I skipped a few steps from C1 to C2, since the steps are identical for each installation and the final product is hives ready for action. This whole process can take only minutes if you are prepared. And just as quick the bees will be off doing orientation flights.

Finally, I placed the two feeder cans filled with syrup over to the hive entrance feeders until I got a chance to open these cans, mix it's content with my sugar-water mixture and place glass gars where the tin cans are located in the photo below. The final photo - taken early during the install shows EXACTLY how close to my neighbors property line is.

This is pretty basic installation and shouldn't take more than a half an hour to do two hives. Ideally, you can do one hive at a time with about a 1 hour break in between - I did these both in a matter of 30 minutes with my wife shooting the images.

I'll be adding more text and images to this page soon with some detail at what is happening here - coming soon, the Inspection page, showing everything in macro and normal detailed images what to do and expect when looking into these hives the FIRST TIME after installation.

Contacting Beemaster

Hope you enjoy my site and I love to hear from you all.

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Please send any question or comments to

John@Beemaster.com



Beemaster's Backyard Beekeeping WebRing

Manager: robohydrovillecom

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Welcome to Beemaster's Backyard Beekeeping Web Ring. Please visit our members and if you are a hobbyist beekeeper and have a web page, consider joining! We welcome all backyard beekeepers from around the world. Many of our members are regular participants in the forums at Beemaster.com. If you are considering becoming a beekeeper, recently started beekeeping, or are a seasoned beekeeper, check out the wealth of knowledge and commradery at www.Beemaster.com

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[City bees]
A blog by a beginning beekeeper who keeps her colonies on a roof deck in a major American city. Includes lots of photos.

[Imkerbund.org]
Imkerbund.org - Verein für Imker, Naturfreunde, Landwirte und Honigkonsumenten

[Beekeeping with Top Bar Hive and DVD Video Instruction]
Visit BackYardHive.com to learn more about hobby beekeeping, the top bar hive, and hive management.

[Robo's World]
My personal site documenting my Beekeeping trials and tribulations.

[Dr. Gene Garris' Bee Ranch]
This is the internet site for my new adventures in beekeeping.

[Urban Bees]
I became interested in the European Honeybee (Apis mellifera) after speaking with a local beekeeper. I live downtown in a small city, about 60 miles South of Atlanta, Ga. Currently, I have 4 hives that I maintain in an "urban" setting. There are many ornamental & decorative plants, bushes, trees and shrubs in this area that are beneficial to the honeybee and the production of honey

[Linda's Bees]
I'm a novice beekeeper in Atlanta, Ga. I've set this site up to follow the successes and challenges of my beginning beekeeping.

[Manowar's Home Page]
Devoted to my beekeeping hobby, with links to my hive inspection log, pictures and a helpful Excel hive log you can copy for your own use.

[Der Schaubienenstand Honighaeuschen auf dem Drachenfels]
Besuchen Sie den Schaubienenstand Honighäuschen auf dem Drachenfels. Führungen für Schulklassen, Kindergärten und Wandergruppen an Buckfastbienenvölkern in einer biozertifizierten Imkerei erwarten Sie.

[Apis629's Page]
This page has usefull links as well as papers on honeybee research and beeyard experiences.

[Beekeeping Update]
Get all the latest news and my view on the exiting world of beekeeping

[eivindm's home page]
My personal page

[Beekeeping In Oklahoma]
My adventures as a hobbyist beekeeper in oklahoma.

[Apinews]
Beekeeping news from around the world

[Aktion gegen das Bienensterben durch Pestizide]
This site is against using of pesticids in agriculture, especially because of its consequences to apiculture.

[Molly's Bees]
I am a novice back yard beekeeper learning as I go. Please visit and leave feedback. Thanks!

[Hive Mind Backyard Beekeeping Blog]
Seattle backyard beekeeper's adventures

[Beekeeping in Massachusetts]
Beekeeping Site of beekeeper in Leominster, MA. Links to beekeeping resources and sites. Some recipes, pictures and other information.

[Life in Lesli's Apiary]
A journal kept by a new beekeeper trying to keep things organic in a mite-ridden world.

[The ravings of a mad beekeeper]
Stuff about my bees, stuff about things that interest me, and of course more stuff.