Beetalk September 2024

General info and news about bees

Hello and welcome.

Beetalk is a compilation of news from across the bee keeping world.

Its not affiliated to any beekeeping group so you wont get things like the next meeting and what we are doing and such like.

We hope that the articles provided will be useful to anyone interested in the a rewarding hobby and in some way we also hope that you may gain some pleasure in reading some of the article that are included.

Also we intend to include articles that may be helpful to anyone new to the hobby.

Based in Lancashire. UK it would be great for any contributions from Beekeepers from the county, the UK and indeed the world. But as stated above, please nothing about your association or group.

Hope you enjoy.

Michael Birt

Editor

If you have any articles that you think may be useful to have included in Beetalk.

Please e-mail them to the editor

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Signs and Symptoms of Queenlessness?

Bees agitated – more defensive • fanning • roaring (a quite distinctive sound!) • aimlessness of workers • brood cells not polished (therefore no eggs) • building of queen cells • multiple eggs in cells.

Swarming and Supersedure: Why?

They are both natural processes, with swarming designed to make increase and supersedure to give the colony extra life when a queen becomes too elderly (or damaged) to lead it.

Drone Laying Queens or Laying Workers?

Drone laying queens: • eggs still laid at bottom of cell • still laid in a reasonable pattern but higher domed cells Laying workers: • eggs laid on side of cells • often multiple eggs in each cell • an erratic laying pattern • queen cells

Detection and Confirmation of Queenlessness?

Changed behavioural characteristics • use of a test comb (frame of eggs from another disease-free colony) - if queenless, workers will raise queen cells - if queen present, they will continue as normal.

Types of queenless colonies.

Some of us will instantly recognise the part we played in 'producing' one or two of these!

The Deliberately Queenless Colony

Generally not a problem because under the beekeeper's control • queen removed to allow introduction of new queen or queen cell • introduce to the colony what they would be expecting(i.e. queen or queen cell) • sometimes beekeepers remove queen to use as a crop enhancement technique (mostly on heather)

The Accidentally Queenless Colony

Firstly, identify why the colony became queenless and don't do it again!!! • identify how long the colony has been queenless • unless you wish the colony to requeen itself, remove any queen cells which have been constructed • introduce to the colony what they would expect

The Apparently Queenless Colony

Check the symptoms. Are you sure they are symptoms of queenlessness? • things aren't always what they seem. Read the signs carefully! • test for queenlessness with a test comb (but only after removing all queen cells)

The Hopelessly Queenless Colony

Defined as one which has no prospect of raising a viable queen itself • it will not survive on its own and may be of little use to a new colony as its workers are liable to be too old and decrepit.

With the continued poor weather looking to persist through to the end of the year , colonies may be starting to run out of food (if they haven't already). It would be advisable to check the food levels by opening the hive and making a very quick observation on their store levels. Key points to remember are:

- The colony may still have stores available which are at the other end of the brood chamber to the cluster of bees. If there are 'empty' frames between the two then the bees could still starve, despite food being in the chamber. Move the frames of food directly next to the outer frame where the cluster resides, ensuring that you score each frame of food (not excessively, but enough to stimulate feeding). Be sure not to knock or roll the bees when doing this and to be as quick as possible.
- If the colony has little or no frames of food then give them a block of candy or fondant. You want to aim for about 2.5 kg per hive and although this may seem to be a great expense, it is far less than the money you will have wasted should the bees die.
- Mini plastic bags that are used to store loose fruit in from the supermarket are perfectly acceptable for holding the fondant and cost nothing. Pack the candy in the bag and then pierce holes in the appropriate place once you get to the hive. If the bag seems fragile then you can double bag it (just be sure to pierce both bags).
- At this time of the year we would usually start feeding sugar syrup but with these temperatures it is still too cold. Place the fondant directly above the bees, turning the crown board if necessary so that one of the porter bee escape holes is above the cluster. Please be aware that this should be done as quickly and carefully as possible and although it may seem too cold to open the hive now, it is far better to do so knowing the bees are ok than not to and find later that they have died.

Recovering Beeswax

Here is a simple method:

Take a pair of tights or a muslin bag filled with old wax and knotted closed or tied with string, the largest saucepan you can find, (and do not want to use in the house again!). Put tights/bag into pan, weigh down with a stone, add a few squirts of lemon/lime juice and water to cover. Bring to a gentle heat. Let it cool and you will have a (cleanish) wax disc. Scrape any residue from the underneath and you will have wax to trade, sell or use. Using a camping gas stove outside can avoid mess (and chastisement!) in the kitchen. Making the water slightly acidic avoids any saponification (soap) that might be caused with a slightly chalky water supply. The purists will recommend rain water as the best source of water to use, but most of us are mere mortals and find the tap quite convenient. Make yourself a solar melter with an old double glazed window and a few bits of wood. Put a metal bottom in it and place a clean piece of sacking over the metal. Tilt it. Put all your wax on the sacking and it will melt through the sacking and clean wax will drip into a container at the bottom. No cost, no problem, reusable, and when the sacking is totally finished then use it to light the fire or start a bonfire. For cleaning up frames, use an old brood box with a crown board, cut to take a wallpaper steamer. Put the frame(s) in the BB, turn the steamer on and collect all the wax in a container underneath that has a fine mesh to take out the none wax parts. It does collect the water as well but that's easy to tip off. It also cleans the frames off ready to use again.

What Are Your Bees Actually Doing?

Question – What are the different roles of worker bees during the Summer?

During the Summer worker bees have a hard life – the outside bees are always on the move, gathering nectar, packing pollen and flying backwards and forwards to their hive. So how is all this organised? It certainly is not random but is controlled, so that everything gets done in the most efficient manner. A worker bee changes its activities in, and out of, the hive according to its age. This is given the grand name of 'age polyethism' and is broadly in response to the development of various glands. There are no hard and fast rules however and basically an individual bee can do virtually anything at any age, but not always with the same efficiency.

Newly-hatched workers

The little pale furry bees that crawl out of their cells start their lives as cleaners. This requires nothing special other than the salivary glands. They also consume great quantities of bee bread, which is preserved pollen and is a highly nutritious food containing a high level of protein as well as fats, vitamins and minerals. This diet results in the development of the hypopharyngeal and mandibular glands, two pairs of head glands which produce brood food and royal jelly.

Three – Fifteen Days

With highly developed hypopharyngeal and mandibular glands, packed full of larval food, the bees move on to the next job and become nurse bees, feeding and tending larvae of all types, and the adult queen. They continue to eat bee bread and their wax glands begin to develop. A large force of well fed nurse bees is essential to the build-up of a colony in Spring and Summer and to the production of healthy bees in Autumn.

Ten – eighteen days

This is the period during which the wax glands, four pairs of glands on the underside of the abdomen, reach their maximum development, so these bees are the prime wax-producers. To produce a lot of wax requires an incoming supply of nectar (or sugar syrup) and some of the substances found in the pollen are also essential. A swarm requires large numbers of these bees to build its new combs, and this is one of the reasons why foraging slows when a swarm is expected. It allows these middle aged bees to remain 'younger'. Sixteen – twenty days The hypopharyngeal glands, as they decrease in size and no longer produce brood food, secrete greater quantities of two enzymes: sucrase (also called invertase) and glucose oxidase. These are essential in the processing of nectar to honey, so these bees will be concerned with receiving nectar from the foragers and converting the surplus into honey. The mandibular glands switch to the production of 2-heptanone, an alarm pheromone particularly concerned with repelling robbers. Notice that all these periods overlap and also that as the individual moves from feeding brood to making wax and then processing nectar, she will move outwards in the nest, nurse bees being found in the central part and the nectar processors towards the outer areas

Outside Bees: twenty days – death

Finally our bee graduates to outside jobs. Her mandibular alarm pheromones and sting pheromones together with her maximum production of venom, enable her to guard the entrance, and a few bees always do this, as we well know. These are usually bees around 21 days old and this cohort also does ventilating duties if necessary, although older bees may revert to these jobs. The Nasonov gland reaches peak development around this time and most bees become foragers for the last 2 weeks or so of their lives, collecting nectar, pollen, propolis and water. Once they move outside the hive their body clocks are ticking quite rapidly towards their death. They are literally 'worked to death'.

An adaptable system.

It is important to stress that the work done by an individual bee will vary according to the requirements of the colony, so, in a colony which has lost most of its foragers due to poisoning, for example, bees will become foragers at an earlier age or, if careless manipulation by the beekeeper results in the removal of large numbers of nurse bees, older bees can revert to feeding brood by increasing their intake of bee bread and redeveloping their head glands. It is important to understand the make-up of the colony in terms of bees of different ages and to try to maintain this well-balanced state of affairs as far as possible

SEASONAL TIPS



Queen marking:

The queen should have been marked by now but if not mark her

Hive Inspection:

Continue with weekly inspections – swarms are still possible! If you get a swarm do check it for disease

Honey Extraction:

Hopefully July and August have been good months and the bees will be busy foraging on the latter crops and producing some honey. Now's the time to think about where and when you're going to extract your honey and get the equipment ready – or booked if you want to borrow your associations extractor

Feed:

The bees should (in theory) be bringing in enough food but many hives seem a bit light and we are feeding ours - if the weather continues to be changeable then do make sure they're not going hungry.

Wasps:

Keep a look out for wasps and make sure your hives don't get robbed.

Varroa control:

The mite drop shouldn't be more than 10 per day so do check your drone cells for signs of varroa mites on the larvae and treat if necessary.

Nosema:

Remember that this is an ongoing problem in bee colonies and you can get your bees tested for free – just collect 30 bees from you hive and give them to someone who can test them-

European Foul Brood: Please continue to keep a look out for EFB. If you're not sure what to look for, check out the FERA site. If you're asked to collect a swarm from an area where EFB has been found the advice is to collect it and get it immediately inspected by a bee inspector. It's better than leaving it in situ with the risk of it spreading disease.

Queen Clipping:

Opinions vary as to whether to clip your queens or not but now is the time to practice on some drones. For a good explanation of marking and clipping queens see the following link from the late Dave Cushman - http://www.dave-cushman.net/bee/clipmark.html

Acetic Acid:

An excellent way of sterilising your frames but you do need to take care using it. If you're not sure how to do it then detailed instructions will be on the website

Bee brains help to make robots smarter

Honey bee brains could soon be helping robots act more independently. The way that bees smell and see is being studied in a £1m project to produce a simulation of the insect's sensory systems.

The simulated bee brain will then be used by a flying robot to help it make decisions about how to navigate safely. Robots that emerge from the research project could help in search and rescue missions or work on farms mechanically pollinating crops.

The research, which involves scientists from the Universities of Sheffield and Sussex, aims to create models of the neural systems in a bee's brain that helps it make sense of what it sees and smells.

The working model of the sensory systems will then be used in a robot to see if it can move around the world with the sophistication of a honey bee. Dr James Marshall, a computer scientist at the University of Sheffield co-ordinating the project, said simulating a brain was one of the "major challenges" of artificial intelligence. Before now, he said, many of the attempts to recreate biological brains in silicon have focused on the cognitive systems found in humans, monkeys and mice. Computer cluster "But," he said, "simpler organisms such as social insects have surprisingly advanced cognitive abilities." Honey bees are well known for their unerring ability to find their way back to a colony or hive.

They are believed to use the position of the sun as a reference point and can compensate for its movement across the sky when calculating the route they need to return home. "Because the honey bee brain is smaller and more accessible than any vertebrate brain, we hope to eventually be able to produce an accurate and complete model that we can test within a flying robot," said Dr Marshall. The models of the sensory systems will run on a cluster of powerful graphics cards that can carry out the calculations needed to simulate bee brains.

Many scientists have started using graphics cards as number-crunching engines because they are cheaper and easier to use than traditional supercomputers. The research team hopes the simulated bee brain will produce a robot that can make decisions about what it senses rather than just carry out pre-programmed tasks.

BODY ODOUR

Larvae are seemingly pretty inert individuals, sitting curled up in their cells doing very little except eat, but brood has a huge influence on the workings of the colony: the amount of sealed brood present is very influential in determining whether a colony sends out casts after the primary swarm has left, the presence of brood suppresses laying workers much more effectively than a queen, brood has an influence on foraging, the type of brood influences feeding regimes and there are many more ways in which brood is important. So how does the brood communicate with the colony so that the nurse bees ‘know’ what brood is present and understand how to feed it, when to cap it over and so on?

Other questions that arise, as far as adults are concerned, are recognition of nest mates at the various stages of their lives and identification of the different types of bee in the hive. We know the queen produces pheromones, which influence behaviour in the colony, and the workers Nasonov pheromone but here I look at a group of chemicals which have a profound effect on colony organisation and are produced by all the individuals which are part of that colony.

The outer covering of the honey bee, whether larva or adult, is a complicated structure containing many different chemical compounds. They include ten fatty acid esters which seem to be particularly important as pheromones. (For those of you with chemical backgrounds these substances are the methyl and ethyl esters of palmitic, linoleic, linolenic, stearic and oleic acids.) In the larva they appear to be produced and stored in the salivary glands.

The same esters are produced by all stages, but in differing amounts, and different mixes, according to the age of the larva/pupa/adult and the gender and caste of the adult. This enables worker bees to distinguish between worker, drone and queen larvae so that they can have different mixes of brood food, allows the workers to recognise the age of a larva and therefore what type of food that larva requires at any particular time, and to cap over the larvae at the correct age. For example: at the time of capping, four of the esters seem to be of particular significance and the larva produces between five and ten times as much of them as when it is younger. These brood pheromones have a profound effect on the worker bees, affecting their physiology, so that in colonies with plenty of brood pheromones, the age at which a worker starts foraging will be later than where there is little brood.

The pheromones will also suppress the production, in the adult bees, of Juvenile Hormone (JH). This is an important hormone which helps to regulate the aging of the workers and, among other things, helps to determine the age at the onset of foraging. In addition, more brood pheromone results in a greater collection of pollen.

This is obviously necessary for the production of brood food but we now have an explanation of the underlying control of an observed effect. Put together, these various effects on the workers will result in more nurse bees producing more brood food for the large amount of brood. As well as giving the nurse bees information about the brood, these esters have an undesirable effect as they are used by Varroa mites to detect the correct time to enter cells of the fully-grown larvae.

Chemicals which influence the behaviour of another species to its benefit are not called pheromones, but kairomones. It is an interesting concept that a single chemical, or in this case, a mix, can act as a pheromone for the species producing it, enabling the bees to cap over the larvae at the appropriate time while also acting as a kairomone for another species, in this case the Varroa mite. Varroa is attracted by three of the esters, and particularly by methyl palmitate, and it is interesting that, in queen larvae, these three are at about half the strength when compared to workers. There is another ester, methyl oleate, which repels the Varroa mite and this is produced in large amounts by queen larvae.

These two facts combine to help protect the valuable queen larvae from being parasitised by the female Varroa mites. On the other hand, the different mix of esters on the drones’ cuticle as well as the extended period before capping preferentially attracts the mites to their cells. A great deal of research work has been done recently on the effects of these fatty acid esters and it is becoming increasingly clear that they have a major effect on colony organisation, but, at the same time, it must be clearly understood that they work in conjunction with other pheromones, sometimes being antagonistic to them and at other times working synergistically. It is true to say that the more we learn about colony control the more complicated it becomes and the more questions arise that need an answer.

Bumblebees get help from their honeybee rivals.

Bumblebees can use cues from their rivals the honeybees to learn where the best food resources are, according to new research from Queen Mary, University of London. Writing in the journal PLoS ONE, the team from Queen Mary's School of Biological and Chemical Sciences explain how they trained a colony of bumblebees (Bombus terrestris) to use cues provided by a different species, the honeybee (Apis mellifera), as well as cues provided by fellow bumblebees to locate food resources on artificial flowers. They found that the bumblebees were able to learn the information from the honeybees just as efficiently as when the information came from their own species, demonstrating that social learning is not a unique process limited members of the same species. PhD student Erika Dawson, explains: "Most social learning research has focused on learning between members of the same species. But in the same way that human engineers can pick up useful tricks from animals (such as using bird aerodynamics to design planes), animals might of course learn from different species where the best food is, where predation looms or where the best place to nest can be found. "We wanted to determine whether animals can use any social cue to enhance their environment, even if they come from another species that share their habitat, resources or predators." The results show that information learnt from other species can be just as valuable to an animal like the bumblebee as information from their own species. Bees would have opportunities to learn cues from their own species and other species to an equal degree in the wild, as they often share the same flower species as a source of food. This is particularly true for large flowers such as sunflowers, which are often fed from by multiple pollinators simultaneously. The results also show that competition between the two species may be much more severe than previously assumed, as Erika Dawson explains: "If bumblebees use individual exploration and copying of their fellow bumblebees to identify rewarding plants, but also use the information provided by a rival species (ie honeybees), this could have important ecological implications for community structure and formation, and may help us better understand the impact of competition within natural pollinator communities. Bombus hypnorum aka the 'Tree Bumble bee' is steadily becoming more common. It has predilection for nesting in bird nest boxes, but be careful approaching the nest. It is a lot more feisty than other bumbles and will certainly 'buzz' you and may sting.

Do you know the timings below?

STATUS IN DAYS	QUEEN	WORKER	DRONE
Egg	3	3	3
Larva	5	5-6	7
Pupa	8	12	14
Emerges	16	21	24

If not, you should.
It is as important to remember this as it is to be able to recognise queen, worker and drone.
Especially if you are looking at queen cells, for then you can work out when that queen cell may hatch.

“I love the Java Jive and it loves me” Bees and caffeine.

Plants produce caffeine like substances that at high concentrations are bitter and toxic and deter hungry herbivores looking to eat the leaves, so why are these substances found, in much lower concentrations, in nectar? Nectar is there to attract pollinators, so why add a nasty bitterness?

Even more strangely, bees seem to prefer caffeine containing nectar as long as the caffeine levels remain low. Wright et al (2013) recently described a pharmacological mechanism that subtly manipulates the behavior of pollinators to do just what the plant wants; to remember the flower type as rewarding in hopes that the pollinator will visit more of the same kind of flowers; et voila! Pollination. Using the Pavlov’s dogs principle, bees were trained by puffing an odour on the antennae then giving the bee a sugar reward. She soon learned to associate the scent with the reward and extended her proboscis in anticipation.

Another odour does not elicit the same response, so the behavior is ‘learned.’ How quickly she learns and how well she remembers one day later is a neurobiological test of learning and memory. Wright et al trained bees to learn a particular floral odour and the reward was a sweet liquid with or without caffeine. They found that low doses of caffeine helped the bees slightly to learn the odour and helped the bees profoundly to remember the odour 24 hours later.

They then investigated the underlying mechanism. This was caused by the bees adenosine receptors. Humans too possess adenosine and adenosine receptors. Adenosine increases in the brain every hour that you are awake and makes you feel sleepy. Caffeine is an adenosine receptor antagonist, that is it binds to the receptor and prevents the adenosine doing its job.

When caffeine is present in bees brains it inhibits the adenosine receptors which causes the cells which the receptor resides on to experience long-term potentation or activation which is a critical step in memory formation, so the bees learn better the association between that floral scent (flower type) and reward which makes them more faithful to that type of plant, which as we know, is how pollination happens. Bees prefer nectar lightly laced with caffeine but are repelled by nectar too laden with the stuff.

The caffeine levels that lab tests show to be the sweet spot, so to speak, match the actual caffeine levels in nectar found in nature. In other words, bee pollinators have driven natural selection to include levels of caffeine in nectar that are not repellent but still pharmacologically active.

Wright et al 2013 Science 339, 1202-1204.

Seven Golden Rules to Avoid Being Stung (H M Pearson, 1956)

1. Keep only docile bees that are easy to handle
2. Avoid cold, wet, thundery and windy days, especially for manipulations.
3. Be sure that there is ample food, readily accessible for the bees to gorge upon before opening a stock
4. Avoid being over-hot and bearing unpleasant odours about your body.
5. Adopt the minimum personal protection necessary to ensure freedom from worry without hampering operations.
6. Handle the combs of bees with firm, gentle movements, avoiding erratic or sudden gestures.
7. Tackle the bees with understanding and confidence. Do not keep the hive open for any longer than is necessary, decide beforehand what is to be done, then do not delay further, but get on with the good work.

To this I would add an eighth.

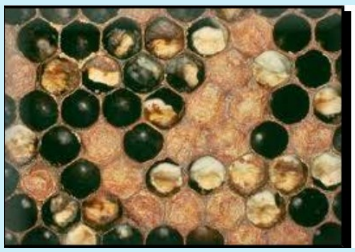
8. Wear a clean bee suit, and if gloves are worn wash them regularly to remove bee venom.

THE INCREDIBLE MATHS OF NEONICOTINOIDS.

5 gallons of PONCHO pesticide weighs about 50 pounds. 40% active NEONICOTINOIDS. has 20 pounds which is about 9 kilograms. A nanogram is a billionth of a gram, or a trillionth of a kilogram (1 x 10 to the minus 12), so there are 9 trillion nanograms of clothianidin in 5 gallons of 40% Poncho – the amount that might be used on one square mile. Still with me? The LD 50 oral (i.e. the amount that will kill 50% of the bees) of clothianidin (the active ingredient in Poncho) for honeybees is 2.8 to 3.7 nanograms - let's say 3 nanograms. So divide your 9 trillion nanograms of clothianidin on one square mile by 3 and you have enough to kill 3 trillion bees, or at 50,000 per hive: 60,000,000 beehives.

Chalk Brood

Chalk brood is a fairly common disease of honeybee brood and is caused by a fungus Ascosphaera apis. The fungus grows throughthe bodies of infected larvae sending fine vegetative thread-like growths into the larval body tissues, eventually overcoming and killing the larvae after its cell have been sealed. The disease spreads as the bodies of dead larvae release sticky spores which adhere to hive components and adult bees. These spores are known to remain dormant and infectious for up to 3 years or more. It is not regarded as a serious disease in normal circumstances, its effects on the colony being only slight. It is generally present in the majority of colonies at some point in time and can be present in its spore stage without affecting the colony. The dead larvae which are hard and coloured chalky white are generally removed by adult bees after they have torn down the cell cappings. These 'mummies' will be quite noticeable on the hive floor or at the hive entrance.



Why use smoke?

It is possible to work gentle bees without smoke if you are calm and quiet in all your movements, but generally, some way ofmaking them calm and quiet in all their movements is needed. It is thought that smoke acts in two ways on bees. The smell of the smoke masks the alarm pheromone given off by the guard bees, helping to stop the spread of defensiveness to all the rest. Secondly, the smoke unsettles them, and as Langstroth said: “Bees, when frightened, usually begin to fill themselves with honey from their combs.” This must be a very old instinct, in case the bees had to leave their home in a hurry because of forest fires or other disasters. Some say they don’t sting because the bee physically cannot get into stinging position due to its fat tummy. Whatever the reason, a bee full of honey is much less inclined to sting. The honey-hunters who preceded beekeepers knew all about this, and rock paintings exist of intrepid figures holding burning branches whilst stealing honey from combs. Bees move away from smoke, so as well as for subduing them, smoke is used for moving them around on the combs, or in at the front door when you wish to put an entrance block in. It is easy to move them on brood comb, but once they get to open honey cells, they stop and stick their heads in. Another use for smokeis if you get stung on your clothing. The bee will have given off alarm pheromone and others are attracted to its source and will continue the attack (old beekeepers say that the first sting is the most expensive one!). An immediate vigorous smoking on the sting site will help avert this. When collecting a swarm, once you have dislodged the cluster into a skep, vigorously smoke the cluster site to dissuade flying bees from landing there again. The site will have become scented with pheromones which will compete with the Nazanov ‘homing’ pheromone from the fanning bees in the skep. Otherwise, smoke is of little use when collecting swarms because the bees have no home to defend and are either already full of honey or have no access to more. Smokers So where is all this smoke going to come from? Any smouldering material will produce smoke and these days it is held in a metal container and the smoke directed where it is needed. All modern smokers work on the same principle; air is pumped from a bellows through a grid holding a fire of suitable material, producing smoke which is forced out through a nozzle, to be directed where required. Smokers come in various sizes,but all can be held in one hand. Stainless steel and copper are the most usual materials but brass is also used. Some have hooks for hanging them onthe hive when in use, some have guards around the firebox to avoid burns, and the bellows material varies, some lasting better than others. Generaly speaking, stainless steel is harder wearing than copper and cheaper. A large smoker will stay in better than a small one and is much more convenient if you have more than a couple of hives. Fuels Fuels are many and varied but need certain qualities. They should: • be easy to light, though you can use a starter fuel as well. • produce a lot of pleasant, cool smoke. • be readily available, and preferably cheap or free. • be slow burning and stay in well. Avoid using anything that produces a stream of sparks, (like sawdust), poisonous plants, insulation materials, plastic, rubber, greasy rags, and a lot of newspaper. Anything with pesticides, chemical dyes, rat-deterrent and fire-retardant should also be avoided. Just about any dry, organic material will do, every beekeeper has their own favourite fuel, but here is a list of some readily available ones Corrugated cardboard - Needs to be rolled up to fit your smoker. Has a rather acrid smoke, but cool. Modern stuff may be treated with fire retardant and be useless. Sacking- excellent if you can get them. Wash thoroughly to remove any pesticides etc. Old rotten, sacks are best, but new ones work well. Rotten wood- It must be rotten enough to break easily with your hands, a good fuel with a cool aromatic smoke. Wood shavings- Must be untreated wood, like pet bedding. Stays in well. May tar up your smoker nozzle. Egg boxes - (not polystyrene!) Very useful for a quick inspection, or as a starter fuel. Burns quickly. Tear into small bits. Pine needles and cones - Free and good if you can get them easily. Cones can be quite hot so put green grass on top to cool the smoke. Dried Grass, Moss, Straw and Leaves - Pleasant cool smoke but burns quickly. Compress it hard and add some green to slow it down. Dried Cowpat etc - Works quite well but a bit smelly! Commercial fuels - good but pricey. Compressed cotton, compressed straw, sacking, cardboard and pellets - all are available. Smoke takes a few minutes to have its full effect, so light up as soon as you get to the apiary. Give some gentle puffs at the entrance, then when you are ready to start, a couple more. Proceed with your inspection, using smoke gently on top of the hive when needed. Don’t suffocate the bees! A gentle colony of bees won’t need much smoke, so puff the smoker a few times anyway, to keep it in. When you have finished, bung up the smoker nozzle with a cork or thick twist of grass, and it will quickly go out. It is a good idea to have a metal container such as a biscuit tin, to hold a hot smoker, especially if it is travelling in the boot of your car. Actually, it is all too easy to set fire to things with a smoker - like your bag of fuel, or dry grass in a hot summer, so carry a bottle of water to quench any unwanted burning

Robbing - a useful feature of a bee colony

Robbing, that frightful word that makes beekeepers' hair stand on end. The attacked colonies always have some deficiency. As a rule, it is the queen. Bees in the hive are aware of the absence of the queen, due to the lack of pheromones, but so are the bees from the other bee colonies. A queenless colony that has just come out of the winter is doomed. In the absence of the queen, there is no brood, no teeming of young bees. The old bees, due to their age, disappear every day. The strength of the colony diminishes by the day and its defences get progressively weaker. When the bees outside sense that they can breech the defensive cordon, they attack, penetrate the hive and take all the honey away. If a robbing colony did not have any honey in its hive, the honey that was stolen would mean the continuation of life. Therefore, nothing exceptional has happened because robbing means taking away from a hive that cannot be saved and giving to another whose life depends on it. Regulated by nature in an extraordinary way, robbing is biologically useful and justified. It means the survival of species in nature. In the apiary, it means fewer dead colonies due to the lack of food. If there were no robbing, the colonies having food but destined for destruction would die. The colonies which are biologically sound but without food would die also. Without robbing, the number of destroyed colonies would be greater both in nature and in the apiary. But why do the robbers attack the mating nucs since they are not colonies in decline but ones building up? The answer is very simple because the bees also view them as a colony in extinction: they have no queen, they are without bees of all generations, and they lack brood in all phases. There are two critical moments that robbing occurs in the life of a bee colony during the year, concerning food. The first moment is the period of coming out from winter when stored food supplies in the hive have been consumed and nature still cannot supply replacement. The other critical moment is the end of summer and the beginning of autumn. That is the last moment when it is necessary to provide sufficient food supplies for the forthcoming winter which is rather difficult because the sources of food in nature run dry. Robbing is only the last act in the process of colony destruction. If the robbing was committed in March, decline of the colony must have started in October of the previous year when the colony entered the winter with the old queen. Therefore, we should not only see the end event, the robbing, but we should also pay attention to the facts that had been happening to the attacked colony in the previous period. The bees are not to be blamed for the robbing in the apiary. The main and the only responsible culprit is always the beekeeper who, owing to delayed and inappropriate application of measures of precaution, contributes and provokes the occurrence of robbing in the apiary. Colonies that are destined for destruction will be destroyed but those with a chance of surviving should not be destroyed - robbing will save them. The only real measure against robbing in the apiary is to rear and breed biologically sound bee colonies throughout the year. Nature has not bestowed upon the bee colony any unnecessary characteristics. Robbing is, therefore, necessary and useful.

BEEKEEPING IN WWII

Due to sugar rationing in World War II, honey was in great demand by local authorities, and a special allowance of some sugar per hive was allowed. Honey was useful in other ways other than just as a foodstuff. It could be used to dress wounds due to its antiseptic c properties and was said to speed up the healing process. It was used until penicillin became available and, it was believed, helped reduce scars. It is still used today in the treatment of burns, and is still a component in some medications for ulcers. In 1943, the Ministry of Food announced that beekeepers qualified for supplies of sugar not exceeding 10lbs a colony to keep their beehives going through the winter, and 5lbs for spring feeding. When it was thought that most of the sugar wasn't reaching the bees because crops of honey were so small, someone had the bright idea of colouring the sugar green to prevent it getting onto the black market. This was soon stopped when the bees started to produce green honey! With a hive ready for bees and basic equipment costing about £7 10s, and a colony of honeybees costing between £2-£4, you could start beekeeping for about £10. If you were making your own hives, you could obtain a pound's worth of timber, and plans without a permit. One elderly beekeeper remembers the advice his father gave: "Measure twice, cut once, my boy: it saves timber and heartache." As part of the war effort, everyone was encouraged to grow their own produce, and it was quite common to see two or three beehives in a garden or on the allotments. The bees helped to pollinate the crops and the honey boosted the meagre sugar ration. During the war, the average price for honey was 2/6s. From the 9 June 1947, the price of home-produced honey became decontrolled and it could be sold freely at whatever price the beekeeper could obtain, usually 4/6d - 5/- per lb. which must have been a great boost to those who had struggled through the war to keep their bees going.

ABOUT STINGS.

One thing that beekeepers tend not to talk about is stings and aggressive tempered bees. Recently a friend moved too close tomy angry bees and collected a sting on the ear. I scrapped off the sting for him, but he said 'it's gone into my ear' although I didn't see it. On closer examination I could see its tail end; right down in his ear. Horrible! I tried to gouge it out with a rolled up piece of paper but to no avail. Tweezers were the only answer. 'I'll go home' he said and got in his car, sped home about a mile, buzzing bee and all, while calling up his wife asking her to find some tweezers. By the time I had arrived and parked the bee was out, still alive and buzzing! In one area of Chelmsford a swarmy and vicious strain of bee has taken up residence in a good many houses generally behind fascia boards or in cavity walls. For most house owners the cost of removal is out of the question and they are not bothered anyway. At first these swarms appear to be manageable but by the next season they are desperate to swarm, sometimes twice, which means they collect little honey and generally are very aggressive. To beekeepers they are a dead loss and the problem just gets worse. I speak from bitter experience having been collecting swarms for 23 years, and try to loose those bad ones in two apiaries out in the country. There are now ten colonies that will have to be sorted out, but bees like that are not easy to re-queen, some being almost impossible to deal with, and passers-by get stung even when the colonies are left alone. Even 'nice bees' can have their moments, but when and under what circumstances we don't seem to know. Recently a friend of mine was taking off supers with just a T-shirt under his overalls. His bees were normally very manageable but on this occasion they went for him, and he was repeatedly stung on the arms through his bee suit. He won't do that again. The trouble is you can never be certain. Years ago I did the same thing wearing shorts under a bee suit, that gave me dermatitis, lasting several years. I've often wondered what it is it that makes bees suddenly attack, and how do they communicate? Some say they smell a bee sting, which makes the flyers attack, but it doesn't seem to be like that. Nor does the weather seem to be the answer, or time of day or storms. I rather think it's when a colony, as a whole, gets angry due to robbing by other bees or wasps. It seems that in an apiary of bees, where the queens are sisters having common drones, that bad robbing starts where the guard bees are not able to distinguish their own hive scent. I've had evidence for this where moving a colony solves the temper problem. The answer appears to be - we just don't know. You never can tell with bees. When inspecting nasty or questionable bees I have learned to wear a pullover, or two shirts, under my bee suit and using two pairs of gloves - one cotton and one plastic. Also, I stuff dusters in the tops of my wellies. Of course it's best to have nice bees; but don't get caught out, even with 'friendly' bees, you might suddenly get a nasty surprise one day.

NEW RESEARCH PROJECT.

Honeybees may soon be able to communicate their poor health to beekeepers as a result of major new research which looks set to transform the practice of beekeeping and halt the worrying decline of the sector in Europe. A consortium – initiated by Nottingham Trent University (NTU) and the Bee Farmers' Association of the United Kingdom – has launched a €1.4m EU-funded study, which aims to monitor and decode the buzzing of bees in the hive and pass crucial information to beekeepers via wireless technology. The researchers have already developed a hi-tech method of using accelerometers – devices which are sensitive to minute vibrations – to detect and translate the vibrations caused by bees during their activities and as they communicate with one another. As a result they have been able to monitor when a hive is about to swarm, which leads to the loss of bees – but are now investigating changes and patterns in buzzing which may indicate specific health disorders, or deterioration in the hive. The experts are developing methods to transfer wirelessly instant alerts to the beekeeper, either via email or SMS, so that they can intervene and manage their colonies accordingly. The research is expected to significantly improve the efficiency of beekeeping, making it far less time‐consuming and costly, as well as improving the health monitoring of the honeybee. Beekeeping currently requires physical visits and regular inspections of every single hive by Europe's 600,000 beekeepers, who have to nurture their bees, regardless of conditions. Beekeeping generates more than €400m a year in Europe alone, yet only 54% of the total demand for honey and other bee products is being produced on the continent. Bee populations and beekeeper numbers in Europe have been falling at an alarming rate and honey imports to the EU, from countries such as Argentinaand China, have risen by 20% since 2001. "Despite its importance and the obvious potential for growth, serious problems face the beekeeping sector," said Dr Martin Bencsik a physicist and researcher at NTU's School of Science and Technology. "Action to bring modern management tools to beekeeping and action to halt the decline of the European beekeeping sector is urgently needed, particularly as bees play such a vital role in agricultural productivity. We now have the potential to achieve this. Our tool will allow us to remotely diagnose colony status without the need for systematic invasive opening of individual hives for inspection. Commercial beekeepers will be able to keep more hives over greater geographical distances, which will both increase their efficiency and profitability." Honeybees' contribution to the world's economy is huge. The economic value of pollination worldwide is estimated to be at least €153bn, which represents almost one-tenth of the value of the world's agricultural production for human food. More than two-thirds of food crops and more than one-third of food production depends on pollinators, while 84% of vegetables grown in Europe depend on pollination. David Bancalari, of the Bee Farmers Association, said: "This could be the golden hour for bee farmers. For years we have been struggling to improve the health of our bees. We know early intervention is crucial. This research could give us those vital, lifesaving early signs of problems allowing us to tend to our bees much sooner – giving us the equivalent of the golden hour in human first aid." Yves Le Conte of the National Institute for Agricultural Research added: "This research is especially stimulating as it can lead to a new modern way of managing hives and it will also be a very beneficial tool for research into honey bee biology."

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DEALING WITH BEE STINGS.

The basic bee sting remedy is to remove it from the skin as quickly as possible if the bee left it behind. A raised welt on the skin with a small black dot indicates the location of the sting. It is a small barbed sliver that has a venom sac attached to it. This sting and sac combination means that, if it is left in situ, the venom will be deposited continually into the skin for at least another 20 minutes. In addition, a pheromone will be released that will signal other bees in the area to sting as well. Therefore, the first two essential bee sting treatments are to get away from the area first to prevent multiple stings and then remove the sting quickly afterwards. Initially, recommendations to remove the sting involved using a flat, stiff object such as a fingernail, credit card, or knife blade to lightly scrape out it out. It was speculated that if the sting was squeezed by pinching with fingers or by using tweezers, additional venom would be injected into the skin of the victim. However, a study in 1996 (reported in the Lancet) tested this theory and found that it is more important to remove the sting as quickly as possible by whatever reasonable means available. Any delays will result in more venom being injected into the skin that would have been injected by squeezing the sting. Therefore, use of tweezers or the fingernails of your thumb and forefinger to grab and remove the sting is acceptable. The key is to remove the sting quickly. Once the sting has been removed, then it is prudent to focus on treating the bee sting symptoms that the victim is experiencing

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LOCATION OF DRONE CELLS

Q: Why do bees usually put drone brood on the bottom of combs?

A: In his book, 'The Biology of the Honey Bee', Mark Winston notes that honeybees are unique in placing drone brood cells at the edges of combs, whereas other bee species place drone cells throughout the brood area (p. 85). He provides several reasons:

1. Grouping drone cells may assist the queen in laying batches of fertilized and unfertilized eggs.

2. Grouping different cell sizes makes the comb more uniform and consequently, stronger.

3. Drone brood is more expendable than worker brood, and when temperatures fall and the cluster tightens and becomes smaller, the drones are the first to chill.

4. Drones can withstand cooler and less constant temperatures than workers because they are larger and mature more slowly.

COULD CRISP FLAVOURING SAVE ORGANIC HONEY PRODUCTIO COULD CRISP FLAVOURING SAVE ORGANIC HONEY PRODUCTION? NEY PRODUCTION? Sodium Acetate, which is the flavouring for salt and vinegar crisps, has some unusual properties.

The first of these is that you can make it yourself in your own kitchen. All you need is a large saucepan, some bicarbonate of soda used for baking, and some white vinegar or 5% acetic acid. The two are mixed together then heated to boil off the excess liquid till only about 10% of the original volume remains. Strain the mixture into a jar through a coffee filter and wait till it cools. Now the magic bit, put a stirrer in the jar and watch as the liquid turns solid like ice, but unlike ice it will be giving off heat, lots of it. By now some of you might be thinking that sounds very like what happens with a certain type of hand warmer. You are right, it's the type where you have a plastic bag filled with liquid and containing a small disk, when you click the disk it triggers a reaction, the liquid goes solid, and the hand warming effect begins. This usually lasts about an hour before the bag starts to cool and needs recharging. You do that by putting the hand warmer in boiling water till the contents return to a liquid again, ready to be cooled before the next use. What's that to do with organic honey? Well, one of the few weapons against Varroa that does not involve using chemicals is heat. In fact Varroa die at 40C in only a few seconds, bees on the other hand can deal with that temperature easily. The brood nest is at around 35C most of the time so a temperature lift of only 50C would be needed and then only for a short time. Now, the heat output from one of the aforementioned hand warmers is a constant 50C, which is happily also well below the melting point of wax. So now we have a heat source which is clean and capable of delivering the knock-out blow to Varroa without harming the bees Where should we put it? Well, to do most good the Varroa who should be most in our sights is not the one we see on the floorboard inserts, that is the female. We want to kill the male who never leaves the comfort of the cell and dies after mating. Fortunately, we can mostly predict where he will be, since, when a female Varroa enters a cell she waits for the cell to be capped before setting up home on the bee larvae. Next she creates two main sites on the body of the bee larva, one for feeding some way up the body and another near the base of the cell, also on the larva, but at the tail where she defecates. This site is the faecal accumulation site or FA for short. The first egg she lays hatches, and this is the male. He heads straight to the place where he will spend most of his life, the FA site. Here he waits for the ladies, who hatch next, to find him. He doesn't leave to feed he just waits patiently and that's why he is a sitting duck if we can raise the temperature at the FA site quickly to 40C even for a short time. How to do this remains a problem but I would suggest if a frame was to be made with two sheets of foundation spaced adequately to accommodate hand warming pads they would provide the ideal heat source, cheap, reusable, safe, non toxic, and enough heat to do the job without melting the wax or harming the larvae.

ED . Pie in the sky you may say but nevertheless, food for thought.

ADJUSTING THE QUEEN EXCLUDER ADJUSTING THE QUEEN EXCLUDER QUEEN EXCLUDER

When placing a queen excluder between the brood chamber and honey supers, place the front edge of the excluder about two centimetres inside the hive body (the back edge will stick out of the back of the hive). This creates an unobstructed path along the inside front of the hive for nectar loaded bees to get into the supers and (according to reputable sources) effectively keeps the queen below in the brood boxes without violating bee space. (It might just work – let BEEMASTER BEEMASTER BEEMASTER know if it does. Ed.) THINGS I DID NOT INVENT Michael Bush, Bushfarms INVENT "Christopher Columbus, as everyone knows, is honoured by posterity because he was the last to discover America"--James Joyce "The thing that has been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun. Is there anything whereof it may be said, See, this is new? It has been already of old time, which was before us."--Ecclesiastes 1:9,10 From time to time someone accuses me of trying to take credit for some idea or another. So just to clarify, I am not trying to take credit for inventing anything and here is a list of a few of the things that I did not invent: Beespace Beespace Not only did I not invent this (obviously the bees did) and I did not discover this (obviously it has been used for a long time), we probably don't know who did. The Greeks figured out how to space the combs to get it between the combs. Huber measured it with quite a bit of accuracy. Langstroth didn't even invent the idea of W 768 using it around frames. Jan Dzierzon did that well before Langstroth. So probably you could say the Langstroth hive was invented by Jan Dzierzon. Using 8 frame boxes Using 8 frame boxes They were invented more than 100 years ago. Probably about 150 years ago. Kim Flottum has been a proponent for a very long time. CC. Miller, and Carl Killion also. I just think they are a good idea. Top Bar Hives Top Bar Hives The Greeks invented them several thousand years ago. They also invented the idea of a comb guide on the bars. I built one based on the Greek basket hive out of wood back in the 70's before I'd seen a modern one. But the idea was from the Greeks. Mine was not a long hive (I hadn't thought of that yet) so it wasn't very useful and when I saw an article in ABJ back in the early 80's with a picture of a Kenya Top Bar Hive I realized they had already perfected what I had tried to copy from the Greeks. Foundationless Frames Foundationless Frames These have been in use for a very long time. Jan Dzierzon, Huber, Langstroth and many others had foundationless frames. All of them really based on the Greek basket hive's top bars. Something close to what I now make is in Langstroth's book and his patents and Kings books. A.I. Root and other early beekeeping supply houses manufactured them for years. More recently Charles Martin Simon has tried to repopularize them. I do think they are a great idea. Narrow Frames Narrow Frames These have also been in use for a very long time. I can't find exact measurements on the Greek basket hives, but Huber used 1¼" frames in the late 1700s. Many proponents over the years have used them and suggested them. Koover, more recently, was a proponent. The Russians did studies on them and concluded that they had less Nosema, and more brood rearing with the narrower frames. I just think they are a good way to get small cell more quickly and, also, to get nine frames of nice straight brood comb in my eight frame brood boxes. Long Hives Long Hives I did come up with the idea when I hadn't seen one, but it was just an attempt to solve the problems of lifting full deeps for an old lady who loved bees and had a bad back. But others invented it long before I thought of it. It's an obvious idea if you're trying to solve the problem of lifting boxes. It has been around for centuries. It is still the most popular arrangement for a hive in the world, even today, and is popular from Northern Europe to the Middle East to Africa and beyond. Smoker Insert Smoker Insert The soupcan insert that I make is just a copy, except made from a free tin can, of the one in the Rauchboy smoker. I certainly did not invent it, but I like it and simply wanted to convert all my smokers. So I made them from an old tin can. Probably someone did it before Rauchboy the same way. Not Painting Hives Not Painting Hives This was not my idea. It is, of course, an obvious step for any lazy beekeeper, but C.C. Miller, G.M. Doolittle and Richard Taylor published the concept long before I did. "Following the teachings of G. M. Doolittle, in whose ideas I have great confidence, I think there is better chance for the moisture to dry out of unpainted hives than out of painted ones. I have seen a painted hive in my cellar damp and moldy when all the unpainted ones were in much better condition."--C.C. Miller Small Cell Beekeeping Small Cell Beekeeping Of course the bees invented natural cell size. Lusbys, as far as I can tell, were the first to associate it with disease prevention and bee health. I'm a late player in the small cell game. Lusby's started in 1984. I started in late 2001. Top Entrances Top Entrances I'm not sure who all has tried this over the years or who to give credit to. Someone was quoting some Eastern European beekeeper who credits top entrances with all sorts of benefits that I have not observed, but I have found it a simple way to keep bees while resolving several problems I had with pests and ventilation. Lloyd Spears was certainly doing it and being a proponent of it long before I came along and he is where I got the idea for using shingle shims to hold up the lid. Opening the Brood Nest Opening the Brood Nest I'm not sure who first tried opening the brood nest for swarm prevention. It's another mystery to me. I've been doing it for years because I read it somewhere. At first I thought I was just helping the bees keep the brood nest open because they somehow accidentally fill it with nectar, commonly called "honey bound" in the old bee books, which causes them to swarm. Eventually I began to realize it was their intention to fill it in order to swarm. But regardless of the reason. Keeping it open avoids them swarming. Various people over the years have used, encouraged, and named this various things and done variations of the implementation. The end result is still the same. An expanded brood nest that heads off swarming

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UK Honey Labelling Regulations

Below is our simple advice on honey labelling. For more detailed information - go to the website of the Food Standards Agency. www.food.gov.uk

1. The Word "HONEY" is required.

2. The weight must be on the label - we will ensure it is the legal size and format.

3. You can specify the area where the honey is produced. For example, Lincolnshire, Forest of Dean, Scottish Borders.

4. You can specify the type of honey. For example, Heather, Borage. The honey must be at least 75% of that particular type.

5. If you are selling the honey, you must have your name and address on the label. It does not need to be complete but you should be able to be found from the information.

6. If you are selling the honey through a third party, you must have a lot number.

7. New for 2003 You must have a best before date on the jar. We suggest 2-5 years from now.

8. New for 2003 You must have a country of origin on the jar. For example - Produce of England, Product of Scotland, Harvested in Wales. Adding the country to the end of your address is not acceptable.

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