



Beetalk March 2015

General info and news about bees

Hello and welcome.

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

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.

Being based in Lancashire it would be great for any contributions from Beekeepers from the county. But as stated above, please nothing about your association or group.

Hope you enjoy.

Editor

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

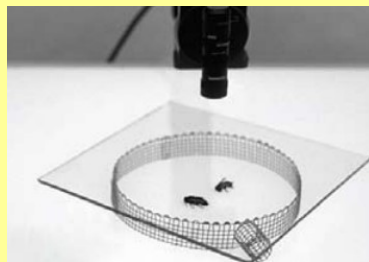
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Battle royal: queen fights

Dr Pflugfelder, a scientist from the Swiss Bee Research Centre in Bern, opened his talk by referring back to Charles Darwin, who discussed queen fights in his evolutionary discussions in *On the Origin of Species* (Chapter 6, pg 202–203): “It may be difficult, but we ought to admire the savage instinctive hatred of the queen-bee which urges her instantly to destroy the young queens her daughters as soon as born, or to perish herself in the combat; for undoubtedly this is for the good of the community; and maternal love or maternal hatred, though the latter fortunately is most rare, is all the same to the inexorable principle of natural selection.” It is clear from what we now know that Darwin didn’t fully understand this – he thought that the mother kills her daughters during the queen fight in a hive (i.e. maternal hatred). We know that in nature the fertile queen leaves the hive in swarming, and this can be considered an act of selfless love – leaving her daughters to fight it out for the inheritance of the colony. In the hive there is reproductive dominance of a single queen (this is technically called monogyny) with suppression of egg laying from her daughters, the workers. So what happens in the hive where several queen cells may develop and the young queens emerge? They fight each other and only one survives. This is a way of regulating monogyny. Dr Pflugfelder described the work he conducted for his doctoral research thesis. He explained the structure of the queen’s sting, and the quantity and quality of venom – which is different from worker stings, and specialized to kill other queens. Queens also don’t show any avoidance behaviour, so that the fights with competing queens are dramatic and the result is death of the loser! To investigate the chemical cues of this queen behaviour, Dr Pflugfelder used a simple bioassay featuring an arena, much like a mini perspex boxing ring. He videoed the fight and then analysed the contest in slow motion. This allowed him to describe a defined a stereotypical sequence of fighting:



- Recognition of foe • Rolling around on top of each other • Grasping with their mandibles at the wing bases
- ◆ Bending abdomens and searching for a precise point of venom injection point at ‘neck’ of honeybee (between the thorax and the head where a key nervous system ganglion is located)
- ◆ • Sting • Dead queen in a few seconds See a BBC wildlife video of the fight at <http://tinyurl.com/cewmab4>. Just like many other communications within the dark hive interior the queen produces pheromones. She begins to release this just one day before she emerges from her cell, and the level increases over the next few days. After this initial increase the pheromone levels remain stable throughout the remainder of the queen’s life. To trigger fighting, there needs to be direct contact between the queens, but no light is needed. Contact is from an increased number (relative to workers) of hair sensors on the tip of their antennae, which are sensitive to volatile compounds. The pheromone is synthesised on specific tergites of the uppermost (dorsal) surface of the queen’s abdomen. There are tergite glands on 2nd, 3rd and 4th segments. Dr Pflugfelder has analysed the composition of the secretion from the tergite glands to account for queen stinging behaviour. To do this he used a sophisticated technique called preparative gas chromatography with mass spectroscopy (GC-MS). This essentially produces a chemical ‘fingerprint’, and by comparing this with pheromones from worker bees he identified distinct chemicals that are not found in worker bees. The ‘releasing’ pheromone is found in several *Apis* species, including *Mellifera florea*, *Cerana*, *koschevnikovi*. In all these species the queen honey bees fight and exhibit this releasing behaviour. The releasing pheromone is the same in all of these species, as demonstrated by fights between the species in his bioassay, e.g. *Apis mellifera* vs *Apis cerana*. This fighting behaviour must therefore have developed from the earliest *Apis* genus, and during evolution this has been highly conserved to be used in the queen fight.

The world of the queen

Anatomy:

The most distinctive feature of the queen is her large abdomen containing sizeable ovaries. A queen has a functional sperm store (called a spermatheca), specialized queen pheromones, big-toothed mandibles (only used to kill other queens), and a curved sting with very few barbs. In contrast the (female) worker bee doesn’t as a rule lay eggs. Instead the worker has wax glands, pollen collecting kit, worker pheromones, spoon-shaped mandibles, a straight barbed sting, more sense organs, more eye facets (called ommatidia), and a long proboscis to reach into flowers for nectar collection. Bees are therefore adapted for their functions and in many ways the worker bee can be considered to be much more complicated than the queen. The queen’s abdomen is virtually filled with two ovaries (150–180 egg tubes, called ovarioles Ë per ovary), connected via two lateral oviducts to the spermatheca. A spermathecal gland secretes substances to nourish the sperm. .

Birth and mating:

The early life of the queen is different to that of the worker.

• Egg laid in a queen cup: 3 days • Larva (5 moults): 8 days. The developing queen larva is fed exclusively on royal jelly. The composition of royal jelly (a form of brood food) is 60–70% water, 12–15% protein, 10–12% carbohydrate, and 3–7% lipids. There are also traces of minerals and vitamins. It is a complete food for the larvae, and can also be called ‘bee milk’. Royal jelly is produced in paired hypopharyngeal and mandibular glands in the heads of workers. The hypopharyngeal glands have high protein levels, especially of the major royal jelly protein

◆ Emergence:

The queen emerges at day 15 into the hive, and there is now a period of upheaval – especially if there is more than one queen in hive. During this time there is quite a lot of communication between the worker bees, and the free-running queens in the hive ‘toot’, whilst those in still in their cells ‘quack’. The workers appear to regulate the release of swarms – a swarm will leave if there is a quacking queen to leave behind. It’s important to note that virgin queens are flighty, so looking in the hive during this period is generally a bad idea. Eventually the one queen will settle down as she takes over the colony. She will use her mandibles to tear down any remaining queen cells and also fight with any emerging queens. A queen mates only within the first month after emerging. She may have a worker escort to and from the drone congregation area (DCA). At the DCA she mates with around 10–20 drones, and retains about 10% of the sperm from each drone mating. At the end of this mating she retains around 5–6 million sperm in her spermatheca and uses about 200,000 sperm per season. It takes around four or five days after mating for the queen to come into lay. Queen pheromones: Glands which produce these were discovered by Colin Butler at Rothamsted research laboratories in the 1950s. Pheromones are essential to cohesion of the colony. The pheromone profile changes with time as the queen ages. By around seven months old they are tailing off, making her less attractive to her workers. • The queen mandibular glands produce a mix of 9-oxodec-2-enoic acid (9-ODA) and 9-hydroxy 2-enoic acid (9-HDA). 9-ODA is essential for swarming, and attracting drones to DCAs. • The queen also secretes pheromones from tarsal glands (near her feet) and tergite glands on the upper surface of her abdomen • The Dufour gland (located near to her sting) secretes pheromones that signal fertility and the fecundity of the queen. • The Koschevnikov gland (near the sting) probably attracts workers to the queen.

Health and problems:

Queens are generally very healthy but they are susceptible to Nosema, black queen cell virus, acarine and other multiple types of viruses.

Nosema infection in the queen can cause early supersedure and degeneration of the early formed eggs (called oocytes) in her ovaries.

However, royal jelly provides some protection to the queen; it contains peptide defences and can protect against some diseases. Varroa is not usually much of a problem for queens because of the post-capping period being short (eight days). Royal jelly also has a repellent effect on Varroa mites, and methyl oleate, produced by queen larvae, has a mite-repellent effect.



A queen surrounded by her retinue.

Queen problems:

Having a successful queen depends on her overcoming a number of hurdles – initial survival, mating flight survival, having a successful mating flight, not being superseded, and not being accidentally killed by a beekeeper during an inspection. Drones they need to be fit if they are to mate successfully with a queen. They also need to be in sufficient numbers at the DCA, and have sufficient sperm number and activity. Varroa has a number of bad effects on the drones. For example, Varroa mites feed on mainly protein from the haemolymph of drones, which reduces drone fitness, suppresses the drone’s immune response, and lowers its sperm count. Drones may also die from the effects of viruses transmitted by Varroa. Annoyingly, acaricide chemicals used to treat Varroa can have an adverse effect on both drones and queens. But we need to put this into context – even if half of the queen’s stored sperm are destroyed there is still a large number remaining (around 2.5–3 million). It’s important to note that there may also be a cumulative effect of these chemicals in old wax of the combs in our hives – hence Celia encourages beekeepers to replace old comb to help reduce the risk of increased chemical damage of drones and queens as just described. Beekeeping and queens: Some people are losing queens, so what can we do about this practically?

First and foremost we all learn to rear queens – e.g. grafting, swarm cells in nucs, or the Jenter method.

Secondly have spare queens available in nucs, and overwinter some of these (Celia is a great advocate of spare nucs).

Third, renew brood comb on a regular basis to help reduce chemicals and pathogens, and burn old brood comb.

Fourth, control Varroa and Nosema with non-chemical methods – e.g mesh floors, sugar-dusting, queen trapping, shook swarms or drone brood removal. Fifth, never use chemicals in hive when rearing queens and drones Overall we should have patience when waiting for the mated queen to start laying, and that honey bee colonies are always headed by young and productive queens which should lead to a good honey crop

NEW BUMBLEBEE IN MANCHESTER

This year I got ten phone calls in one week in May for swarms; they all turned out to be bumblebees, The first in a bird box, also the second and then one in an old Ivy covered wall, two in one roof space (one at the front and one at the back) and then another in the roof. More were in outhouse roofs and, of course, bird boxes and even an old tree trunk. At first I could not identify the species but the BBC Wildlife leaflet shows the queen, which is somewhat different, being more colourful, from the workers/drones, but eventually got read to the Tree Bumblebee. I collected one bird box and brought it home to study and another I destroyed and now have it in the freezer for study this winter. My memory took me back to an article in the last couple of years regarding the Whirly or Whirry? Bee but I cannot find the article (BeeCraft, BBKA News?). Can anyone help? These bumblebees have the habit of guarding their nest by a number of between two to twelve bees hovering around the entrance and if disturbed they go close to the threat and will chase you for ten metres or more, It is said it is the drones that do the guarding but I cannot confirm this yet. This is an annoyance but to the General Public a real threat who do not take kindly to the usual advice to leave them alone and enjoy them. The nest matures early (late June) and it is said the new queens may even raise a nest in the same year. This may explain why it has come from the South East of England where it was first noticed in 2001/2 and has now got as far North as Manchester in 2012 - not bad, 20 miles per year if they take a beeline north. This means they search for new nest sites at a fair distance from their birth place and must be very prolific. The nest is the normal bumblebee muddle of cells, all higgledy piggledy, formed on top of a moss or soft base (ex bird box). The nest is not very large but perhaps the ones I have seen have been restrained by the size of the box, They also propolise or blank up the entrance to allow only one bee to pass through. The nests I have seen have been two metres or more above ground level except the one in an old tree trunk where it was only one metre up, now wait and see if the June raised queens will establish new nests. It will take a while for enough bees to emerge to get sightings of them and this is going to be very much weather dependent. I have a few photographs but none good enough for showing here, so perhaps they can be shown at a meeting but I will need a digital projector or else a computer screen to show them. *Bombus hypnorum* or the Tree bumblebee - it can be identified by its white 'tail' and golden patches (sometimes absent or small) on the abdomen close to the wings, the thorax being golden. Some bees may be all black except for a very small white tail. They are normal bumblebee in size and it is the white tail which is the best clue to its identification and it is the hovering, whirly behaviour in front of its nest which will clinch its identification. The range of *Bombus hypnorum* is from the arctic circle, through Europe to Asia and it has not been understood why it has not established itself here before now. What should we do? I know of no one being stung by one but where the nest is close to where small children play it will not be welcomed and therefore best removed or destroyed, otherwise leave them alone and try and enjoy them they won't be there for long.

Look out for the Asian Hornet

Vespa velutina, sometimes known as the 'Asian hornet' is an invasive non-native species from Asia. It has recently arrived in France where it is spreading rapidly. As a highly effective predator of insects, including honey bees and other beneficial species, it can cause significant losses to bee colonies, other native species and potentially ecosystems

Although it is not yet present in the UK, it is considered likely to arrive soon. The places it is most likely to be found are in southern parts of England (it may be able to cross the channel from France) or goods among which it could be accidentally imported (such as soil with imported pot plants, cut flowers, fruit and timber).

Active months between April and November (peak August/September). Inactive over the winter, so the most likely time to see this species will be early next year. What to look out for: *Vespa velutina* queens are up to 3 cm in length; workers up to 25 mm (slightly smaller than the native European hornet *Vespa crabro*) Entirely dark brown or black velvety body, bordered with a fine yellow band Only one band on the abdomen: 4th abdominal segment almost entirely yellow/orange

Legs brown with yellow ends Head black with an orange-yellow face *Vespa velutina* is a day flying species which, unlike the European hornet, ceases activity at dusk If you think you have seen one take a picture and email it with details of where you saw it and your contact information to the Non Native Species Secretariat - for more information go to their website. If it is safe to do so, you can send in a sample to the National Bee Unit for examination to confirm identity. However, do not under any circumstances disturb or provoke an active hornets' nest.



COMMONLY USED PESTICIDE TURNS HONEY BEES INTO 'PICKY EATERS'

Biologists at UC San Diego have discovered that a small dose of a commonly used crop pesticide turns honey bees into "picky eaters" and affects their ability to recruit their nest mates to otherwise good sources of food. The results of their experiments, detailed in this week's issue of the *Journal of Experimental Biology*, have implications for what pesticides should be applied to bee-pollinated crops and shed light on one of the main culprits suspected to be behind the recent declines in honey bee colonies. Since 2006, beekeepers in North America and Europe have lost about one-third of their managed bee colonies each year due to "colony collapse disorder." While the exact cause is unknown, researchers believe pesticides have contributed to this decline. One group of crop pesticides, called "neonicotinoids," has received particular attention from beekeepers and researchers. The UC San Diego biologists focused their study on a specific neonicotinoid known as "imidacloprid," which has been banned for use in certain crops in some European countries and is being increasingly scrutinized in the United States. "In 2006, it was the sixth most commonly used pesticide in California and is sold for agricultural and home garden use," said James Nieh, a professor of biology at UC San Diego who headed the research project with graduate student Daren Eiri, the first author of the study. "It is known to affect bee learning and memory." The two biologists found in their experiments that honey bees treated with a small, single dose of imidacloprid, comparable to what they would receive in nectar, became "picky eaters." "In other words, the bees preferred to only feed on sweeter nectar and refused nectars of lower sweetness that they would normally feed on and that would have provided important sustenance for the colony," said Eiri. "In addition, bees typically recruit their nest mates to good food with waggle dances, and we discovered that the treated bees also danced less." The two researchers point out that honey bees that prefer only very sweet foods can dramatically reduce the amount of resources brought back to the colony. Further reductions in their food stores can occur when bees no longer communicate to their kin the location of the food source. "Exposure to amounts of pesticide formerly considered safe may negatively affect the health of honey bee colonies," said Nieh. To test how the preference of sugary sources changed due to imidacloprid, the scientists individually harnessed the bees so only their heads could move. By stimulating the bees' antennae with sugar water, the researchers were able to determine at what concentrations the sugar water was rewarding enough to feed on. Using an ascending range of sugar water from 0 to 50 percent, the researchers touched the antennae of each bee to see if it extended its mouthparts. Bees that were treated with imidacloprid were less willing to feed on low concentrations of sugar water than those that were not treated. The biologists also observed how the pesticide affected the bees' communication system. Bees communicate to each other the location of a food source by performing waggle dances. The number of waggle dances performed indicates the attractiveness of the reward and corresponds to the number of nest mates recruited to good food. "Remarkably, bees that fed on the pesticide reduced the number of their waggle dances between fourfold and tenfold," said Eiri. "And in some cases, the affected bees stopped dancing completely." The two scientists said their discoveries not only have implications for how pesticides are applied and used in bee-pollinated crops, but provide an additional chemical tool that can be used by other researchers studying the neural control of honey bee behaviour. The study was funded by the North American Pollinator Protection Campaign and the National Science Foundation.

Source: American Bee Journal - info@americanbeejournal.com

SHOULD WE FEAR HORNETS? A SHOULD WE FEAR HORNETS?

Ian Moulton's talk about native hornets (*Vespa velutina*) seems to be topical even apart from the threat of the Asian variety. I would like to recount my experience of the native hornets (frelons) in France in order to demonstrate their behaviour and the attitude of the local population towards these frightening insects.

The first time I came face to face with the hornet was some 30 years ago when I went down to my bit of the river in the south of France, parked the Land Rover by the mazet (farmhouse Ed.) virtually under an old hollow oak tree, opened the door and was aware of a sold mass of insects, I quickly closed the door and after a few moments decided not even to try to get out by the passenger door but to reverse out and think about it.

So these were hornets - they did not attack but I did not push it! On returning to the village I discussed the situation with my neighbour, an 86-year old widow of a vigneron, and she said if I wanted to use my river bank it was best to get rid of the frelons by calling the sapiers pompiers (firemen). No problem. I arranged to meet them in front of the Cave Co-operative later that day. F I T 701 They came in a fire engine! So I took them in the 'Landy' and they then dressed up in suits as if the Martians were coming. They told me and ma femme to stay in the car and then they sprayed the nest with what transpired to be cyanide!

They said the hornets were dead and never again would there be a nest in that tree - great. So how much to pay? €30 (300FF) which I gladly paid but, some six weeks later, received a bill for 300FF officially. So the moral - a pourboire - yes - but do not pay the bill unless you want to pay double! I questioned the human behaviour with the Mayor and he said, "Unfortunately that is normal so beware of hornets and the fire brigade!" My life continued in France quite quietly but, one day in the garden where we normally parked the Citroen van, there was (and still is) a hollow tree with an opening halfway down with great big "wasps" coming in and out.

Time to park somewhere else and call the gardener, Didier. He was not too concerned but I suggested bumping the nest off and cutting down the tree in the winter. Didier did not think that was necessary as all we had to do was to avoid the tree and only kill a hornet if it came into the house which is more than 200 metres away. He said, "If you kill a hornet near the nest then the rest come out and get you. So do not do it!" The natural history is that the colony dies in the winter and the queen hibernates somewhere else and the tree or nest area is not usually occupied in the following years. So this last summer (me being me!) I shoved a bamboo pole into the hole - no hornets but an owl flew out of the top of the tree! So hornets can be left alone if you have room.

My neighbour, a commercial beekeeper, takes a different view since his colonies up on the high plateau (Cause du Larsac) have been wiped out by them and he lives in fear of an invasion by the Asian variety. From my point of view if the UK is invaded then we will need an efficient system for reporting and destruction of nests over and above what has already been pro

NEED FOR LATE WINTER INSPECTION NEED FOR LATE WINTER INSPECTION.

Each year, you try to do your best to assure the presence of a healthy, young queen of preferred bee stock, to provide adequate food reserves, to maintain disease-free colony conditions and to provide winter protection for all of your colonies. At this time of year, it is important to check on your colonies during a late winter colony inspection. The purpose of a late winter inspection is to answer several important questions:

Is a colony alive or dead? How available are the food reserves to the cluster?

What is the health status of the colony? Quite simply, a dead or severely dwindled colony should be dismantled and moved out of the apiary to a bee tight storage area or closed up until it can be moved out. This will effectively eliminate the dead or weak colony from becoming a potential source of diseases or pests to neighbouring colonies due to robbing or drifting behaviour. Later examination of the hive equipment may allow for determination of the cause(s) of the colony's demise.

Queens generally begin egg-laying mid-late January and brood rearing will expand if sufficient pollen stores are available within the cluster - even when outside temperatures are below freezing. Winter survival problems can arise, even with adequate food reserves, when the cluster cannot maintain contact with its food reserves. Generally, the cluster will not leave the brood to maintain contact with its food reserves. This is especially the case with small clusters that can cover only a few frames. Sometimes, the cluster will simply eat its way in one direction, lose contact with its food reserves and starve in one corner of the brood chamber.

The cluster may be able to expand during mild weather breaks, but due to a sudden return of cold temperatures, cannot move quickly enough to get into contact again with its food reserves. As a result, a large number of small colonies can die in January and February. This can even happen in more populous colonies if food reserves are inadequate or improperly positioned in the hive. Prior to the actual examination, you should assemble everything you may need beforehand. You must be able to assess each colony quickly and respond accordingly to each situation observed. With your smoker ready, gently pry up the inner cover. Use a little smoke to calm the honeybees. Leave any adhering honeybees on the cover and put them aside, exposed side up. Look down between the frames in the top box to check for adequate honey reserves in contact with the cluster. A fully capped frame of honey equals about 6.5 pounds of food reserves. The colony, in a standard hive, should have from four to six frames of honey in contact with the cluster.

Such a colony should be secure for another three to four weeks. Colonies that have sufficient but positioned food reserves can be quickly adjusted. Move combs of honey to the cluster, rather than the other way around. If you need to centre the entire cluster to surround it with food reserves, you must move the frames as a single unit. Do this as carefully as possible so as not to break up or disturb the cluster. Do not remove frames that contain pollen. If you need to feed a colony, honey is best at this time of year.

A frame of honey, saved during the harvest, for each colony is an ideal source of food. You can also use granulated honey. However, in both choices, disease free sources must be used. Placing an inside frame feeder filled with granulated honey or dry granulated sugar, in position adjacent to the cluster, is an effective way to feed bees. E 702 Feeding sugar syrup at this time can cause excessive moisture, and possibly dysentery problems, especially in small colonies. It can also chill the bees, cause the cluster to become restless and can stimulate food consumption.

Any sugar syrup that you feed should be warm and as concentrated as possible (2:1 sugar water) and limited in volume initially. If you determine there is a shortage of pollen near the cluster, a pollen substitute or a pollen supplement should be provided. Sometimes you may find a colony that is near starvation. The whole cluster appears restless and shivering. If the colony is worth saving (considering labour and time involved versus expected results), there are a few alternative methods you can use to try to salvage the bees. Use of a frame feeder may not be effective as the bees may be too weak to move to the feeder.

You can also provide a frame with warm syrup or honey poured into the cells. When the bees appear to have recovered, you can then place a frame feeder filled with honey or dry sugar next to the cluster. Another quick-fix remedy is to use frames of honey. If the honey is capped, you may have to remove the cappings to allow the cluster quick access to the honey. Where colonies are populous, many beekeepers provide extra feed by using a division board or frame feeder filled with granulated honey or warm sugar syrup.

Some fill empty brood combs with syrup using a sprayer. Others prefer to feed granulated sugar placed onto the inner cover, leaving the feedhole open to allow the honeybee's access to the sugar. However, feeding sugar - dry or syrup - at this time of the year is stressful for the colony. When you provide supplemental feed, you should limit the amounts initially, gradually increasing the quantity on your next visits. Feeding large amounts at one time will usually have a negative effect on colony build-up.

The colony has to divert energy to handle the sugar rather than to rear brood and maintain hive temperatures. The brood nest may also become "plugged" with excess syrup, interfering with egg laying by the queen. Another method that has been used to feed a colony until other forms of supplement can be applied is the "candy-board." If you do use this method, it is recommended to use the soft or fondant formulation. One problem of the candy board is the same as when granulated honey or dry sugar is used to feed colonies. The honeybees do need some moisture to allow them to liquefy the sugar.

There may be sufficient moisture in the hive from the condensed water vapour produced by the cluster as they respire. There is a need to monitor your colonies for the presence of bee diseases and parasitic mites. The best time to monitor and to sample your colonies is now. For information on sampling and detection methods, consult IPM recommendations.

The late winter inspection with its necessary adjustments and/or supplemental feedings of honey, sugar, pollen substitutes or supplements will generally assure the survival and normal development of your colonies until natural sources of pollen and nectar are available.

When winters are severe, you may have to inspect your colonies every two to three weeks and apply additional food reserves. Mid-winter to late winter checks, if done quickly and carefully, will not greatly stress your colonies. Removing the hive cover will not cause problems but disturbing the cluster can. Winter losses due to inadequate food reserves can be prevented by your inspection of each colony as early as possible. However, if many colonies require feeding at this time of year, you may have to re-examine your winter preparation schedule to ensure adequate food reserves in future years.

NOSEMA: A CALL TO ARMS

Nosema may be present in the gut of honeybees at all times but not at the sporulation stage.

What triggers spores to multiply (sporulate) to high infection levels at various times of the year is not yet clearly understood. We know that when we were only dealing with *Nosema apis* spore disease, symptoms appeared during winter months of long intervals of confinement: periods when bees cannot fly to cleanse themselves due to long cluster cold spells.

Also, poor food source or stores aggravated this condition, such as winter stores with too high moisture content or natural nectar/honey from sources such as buckwheat, aster and goldenrod with a high concentrate of indigestible components.

Winter spells of short confinement, coupled with regular cleansing flights and water gathering and consumption normally do not result in bees weakened or dead from *Nosema* disease. That is why we recommend treating your bees in early fall with Fumagillin in the last feedings of sugar water, so bees will store the Fumagillin for winter use.

Feeding Fumagillin in fall for storage is like taking out an insurance policy on your bees. If we have a long hard winter, no flight days, poor food stores, then your insurance policy will pay for itself with healthy *Nosema*-free late winter bees. If we experience the opposite, a mild winter, lots of flight days for voiding and water gathering for diluting poor food stores and ripening high moisture food stores, then your insurance policy was for nothing. It would be nice if we could forecast the weather that far in advance!

Please be aware that you should not feed or treat with Fumagillin prophylactically as sometimes we do for *Varroa* mites, etc. because *Nosema* spore-free bees can become deathly ill if fed Fumagillin. Bees without *Nosema* spores do not digest Fumagillin well or if at all, but will become almost poisoned by its presence. So you are wondering; “How do bees with no *Nosema* spores sporulating in their gut, eating winter stores with Fumagillin present, get sick?” This has not been the case since we have been using Fumagillin for *N. apis* on wintering bees.

But feeding bees prophylactically when no sporulation exists in their gut can cause fatal results *N. 703* Perhaps this needs to be explored more by bee scientists since a lot has changed in beekeeping since *Varroa* mites,

Tracheal mites, BPMS, Cruddy Brood, etc and the appearance of *Nosema ceranae*. Not to mention to viruses, paralysis (viral), CCD, pesticide kills and other bacterial infections being magnified by vectoring *Varroa* mites. Now to address *N. ceranae* and what we know about it. *N. ceranae* occurs normally during spring through the summer months, with emphasis on summer months.

However, this can happen at any time of the year. Causes are not clearly understood at this time, but again it goes back to the similar factors in *N. apis*: poor food sources. Poor food sources could be those carried over from wintering bees who depended on honey and possibly pollen foraged from a poor plant source, such as buttercups, mountain laurel (rhododendron), fermented honey and sugar water, molasses, brown sugar, coke syrup, sorghum, maple syrup, etc.

Field symptoms for *N. apis* and *N. ceranae* may be similar; however, *N. ceranae* is sometimes called “dry *Nosema*” since it does not usually cause the characteristic faecal staining associated with *N. apis*. High infection levels of *N. apis* and *ceranae* still point to poor food sources, but don’t forget stress. Package bees are stressed by confinement, shipping and handling, temperature changes, etc.

Most recommend that the syrup shipped with package bees be treated with Fumagillin. “Is it?” is the big question: probably not! Thus we strongly recommend that newly installed packages be fed Fumagillin to treat for spores present due to stress.

Think: how often do early package bees get installed on dead-out winter combs with poor or fermented winter stores and/or when there is no nectar flow on and poor flying conditions exist? A good percentage of the time, I suspect. None of these are good conditions and they promote *Nosema*. Stress! Stress! Stress! It is becoming apparent that *Nosema* is taking more of a toll on our bees than we realize.

Years ago, it was a wintertime problem/concern only. But now with incidents of *N. ceranae* on the rise, it is a year-round issue. *Nosema*-infected worker bees may not be very productive, but a *Nosema*-infected queen is not productive at all. I suggest that you screen your bees early for *Nosema* in the summer months (mid July–August).

If spore counts exceed one million and up over to five million, treatment is highly recommended so your bees enter early winter as *Nosema*-free as possible.

Even with high thresholds of infected spores, your bees may still look healthy; but not for long and they are doomed as early winter confinement begins. Let me remind you, feeding bees prophylactically with Fumagillin is not the way. Early detection through screening your bees for *Nosema* spore levels is the answer. Contact your regional Apiary Inspector for procedures and guidelines. As always, read the manufacturer’s label instructions for proper use of Fumagillin.

Please adhere to label instructions strictly, since Fumagillin is an antibiotic and we do not want resistant strains of *Nosema* to appear. Remember what happened due to the misuse of Terramycin and the creation of resistant strains of AFB. Beekeeper misuse of this product over a short time led to that development.

As with severe infections of *Varroa* mites leading to abundant symptoms of BPMS, DWV, CWV, IAPV, and Cruddy Brood, treatments may not be effective if detected too late.

Such is true of over-threshold levels of *Nosema* spores—treatment may not be effective. Early detection is the answer. In summary: In summary: We beekeepers must not only be more diligent with survey/sampling/screening techniques for *Varroa*, Tracheal, AFB, EFB, Small Hive Beetle, but also now *Nosema*

QUESTIONS

What can be said about October as a month for things to do, beekeeping wise? One could ask oneself a few questions like: Could I have done things differently this year, bearing in mind that every 'bee year' is a new experience? April 2011 offered a great opportunity to make nuclei for queen replacement, despite May and June being so bad. Many beekeepers, who relied on their bees making swarm preparations before splitting were still waiting in expectation of virgins mating as late as August – where successful, such colonies would require to be reinforced with frames of sealed brood from stronger colonies in the apiary or united to colonies having queens of 'borderline' age for successful over-wintering. So, the next few questions need looking at seriously! o Am I where I want to be at this present time or should the colonies be stronger – should I consider uniting weak colonies? o Am I content with the condition of the queens heading my colonies? o Should I cut my losses and unite colonies with queens more than two winters old to colonies headed by younger (perhaps more vigorous) queens? o Do I feel comfortable that I have achieved optimum conditions for colony winter survival? o Am I sure the bees have been adequately fed or should I augment my late autumn syrup feed with a slab of candy, fondant or even a few thoroughly wetted sugar bags? o The colonies should have been fed at least 1:1 syrup continuously throughout September. If when checking hive weight by hefting from behind – the beekeeper has to adjust his/her feet position due to misjudging the heaviness of the hive – this is an excellent indicator that the colony is 'good' for over-wintering, all other aspects being OK! o Are my colonies housed in winter weatherproof accommodation? W 704 o Are all the hive components, floor, deep box(es), supers, crown board lined up straight and true without gaps due to misalignment into which robbers, rain, frost, wind and snow could penetrate? If the hives had faults of the kind mentioned, the late autumn wasp 'frenzy' for food would have demonstrated to the observant beekeeper where any weaknesses lay. o Are the colonies in the best locations for overwintering? o Are the hives sitting under large trees with large branches which could drip, onto the hive roofs all winter like a Chinese water torture or where they could be crushed in the event of gales? It happens!! There is a classic tale of hives in the wrong place, for the right reasons.

A beekeeper some years ago decided to bring his bees into his workshop/shed for the winter period, having read all about the advantages of the European bee-houses. Checking his colonies in early spring he was appalled to find they were all dead. He had worked all winter using his woodworking power tools and machinery and the constant vibration had disturbed the bees literally to death! o Are the hives facing a southerly aspect? Exposure to winter sunshine can be an extremely critical factor. Especially if the hives are located in a 'frost trap' with no air drainage. On a bright day sunny day around noon, after a night of hard frost, lift the roof of any hive in direct sunlight. Do the same with a hive shaded from this life-giving sunlight. It won't budge! It will be 'cold welded' to the hive. A few degrees Celsius either way can be life or death for your bees! Am I sure that the anti-Varroa treatment carried out is adequate? Bearing in mind that mite tolerance of the pyrethroids is on the increase and that mite is no longer a safe alternative treatment. Do not be afraid to apply the well tried and tested organic acid treatments – you have a choice – go with the obsolete official treatments and risk losing your bees or think about your own peace of mind and the welfare of your bees.

This is a 'no brainer' decision! Is my 'Varroa Drop' monitoring regime correct? o Is the accumulated detritus sufficiently light to allow a clear Varroa count to be made? Some literature suggests the Varroa insert should be read on a weekly time scale, even during the active season – this advice is given by folk who obviously don't use the insert, otherwise they would know that, like in politics, a week can be a long time and, in a bee colony, the insert will have acquired an almost impenetrable carpet of accumulated hive debris, making for very difficult mite fall observations. o Did I check the 'natural' mite fall, before I applied the seasonal treatments? o What level of mite drop per day am I prepared to accept as 'safe'? A natural mite drop of 1 mite/2 days in late December is considered to be the most acceptable – this relates to approximately 50 mites total in the colony. It is now widely accepted and scientifically proven that the queen continues to lay, albeit at a much reduced level during the 'dormant' period and that these winter bees will enhance colony survival chances by replacing a proportion of the older bees lost to 'winter wastage.'

However every egg laid will supply a host for over-wintering mites. In a strongly infested colony the larvae produced will have little chance of survival and the result will be increasing numbers of mites and decreasing numbers of bees. Rocket science is not required to predict the outcome of such a scenario. An oxalic acid treatment around late December could go a long way to reducing winter losses from such a situation. Have I checked my hives in out apiaries after high winds? Always? !

PENTAGON TO HEXAGON PENTAGON TO HEXAGON HEXAGON

, Air Force Lt. Col. Craig Bucher, via the Beekeepers of Northern Virginia (BANV), successfully contained an unauthorized incursion onto U.S. military-held territory. But he was deprived of the opportunity to do so single-handedly, since so many people wanted to help. Yes, my friends, there was a swarm at the Pentagon. With reporting based on a request to the BANV swarm team and excited mainstream media stories, it appears that a swarm of bees landed about eight feet up in a crepe myrtle tree near one of the Pentagon entrances, and the Pentagon police quickly decided that they would do what they could to see that the bees were properly collected, rather than killed. The working population of the building was treated to updates throughout the process, including warnings to avoid the entrance and assurances that "bee specialists" were on their way.

It turns out that several beekeepers work at the facility, and turned up to help if needed. At least one television news crew arrived to document the encounter, and filed a relatively accurate and sympathetic description of swarm catching, docile bee behaviour, and the likely outcome of a happy hive at someone's home. (You can see the video at <http://abcnews.go.com/blogs/politics/2012/05/pentagon-faces-newenemy-10000-honey-bees/>) It's a tribute to beekeeper education of the public that, rather than move immediately to eradicate a perceived threat, the community worked to save the bees.

This is a facility where literally thousands of people are working at any time, but the entire population appeared to arrive at a consensus that the bees were both worth saving and no particular threat to the security of the free world. And our neighbour beekeepers in Northern Virginia deserve a lot of credit for being aware, willing, skilled, and well spoken enough to pave the way for more stories like this one the next time.

For anyone who is interested. Here are some Langstroth Drawer Hive Planes.

Langstroth Cutting List Dimensions in millimetres

Outer Case

2 sides 481 x 248 x 16 plywood

End 413 x 248 x 9 ply

Inner Chamber

Outer end 41 x 248 x 18 ply

2 Sides 475 x 232 x 12 ply

Inner end 340 x 217 x 9 ply

Strip 364 x 25 x 1.6 plastic, alloy or stainless steel

Bottom Rack

2 ends 413 x 20 x 9 hardwood

2 sides 486 x 30 x 9 hardwood

10 slats 486 x 26 x 9 ply

Slide assemblies are 500mm long, manufactured by Topslide International.

Notes

Outer case sides can be made by gluing a piece of 4mm ply to a 12mm piece to form the rebate. The easiest way is to cut the 4mm piece slightly oversize, glue in position, to form the rebate, and secure with a couple of pins to stop it slipping. When the glue has set, under pressure, trim the surplus with a router and trim bit.

The drawer slides listed on the drawings are zinc-plated steel, with ball bearing action. These are 12.5mm thick. They should be well greased to prevent rust. The inside end of the outer track should be cut back flush with the rubber stop.

Plywood sheets often vary from the nominal size. Be warned that the gap between the inner chamber and outer case, at the rebate, **must** be 12.5mm minimum. It is OK if it is slightly over, up to about 13mm.

If, for instance, the 12mm plywood were actually 12.5mm thick, you would need to reduce the width of the inner chamber by 1mm to maintain the correct gap for the slides.

The outer tracks of the slide assemblies have tongue shapes cut into them. They should be secured through the tongues. This allows some flexibility in the assembly, if the rebate gap is slightly over the thickness of the drawer slide.

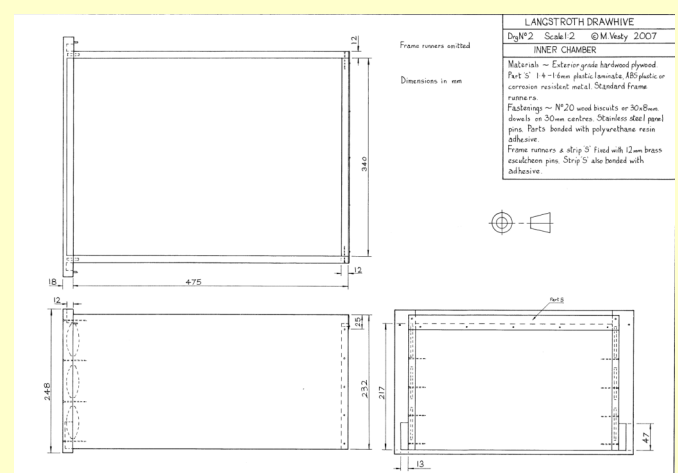
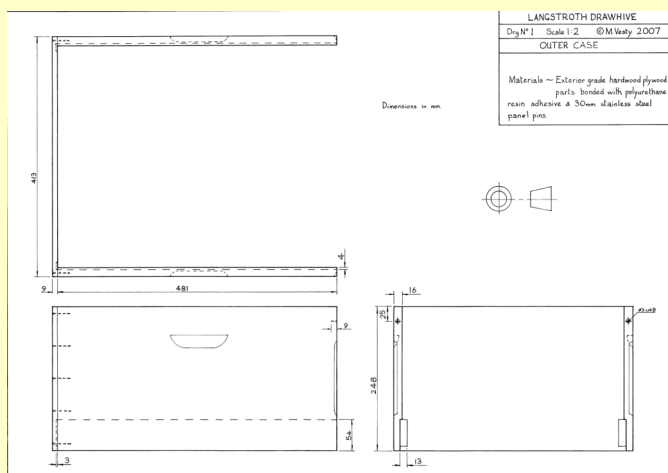
Assembly of the two sections of the Drawhive is best done on a flat surface. A strip of wood 8mm thick is handy for spacing the slides. Having screwed the slide outer tracks to the outer case, position the inner chamber as it would be when opened. It will need packing up at the inner end 8mm.

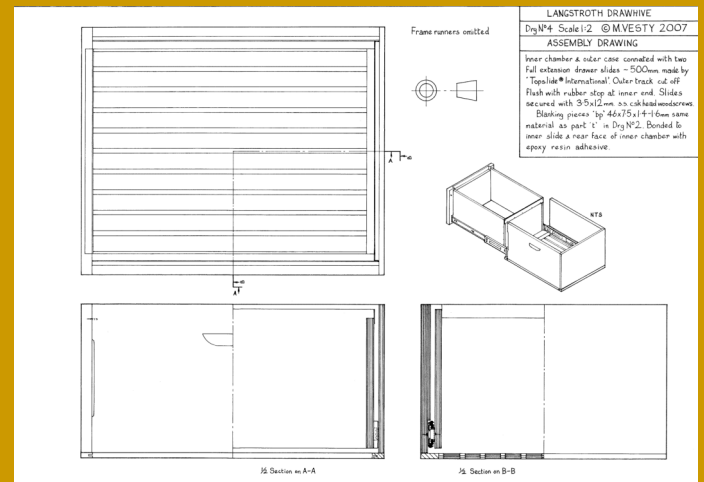
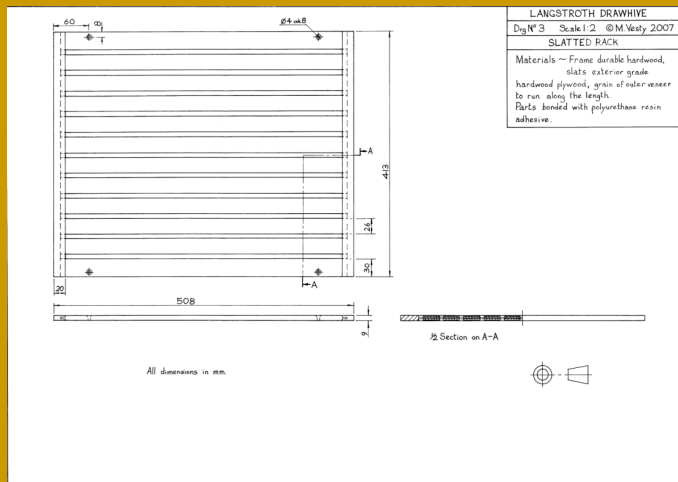
Screw the extending tracks to the inner chamber through a vertical slot at either end. If you then close the hive you will see if the end panel fits to the sides without gaps. Tapping with a mallet can correct misalignment.

The hive can then be opened and the slides permanently fixed with more screws.

Screw No. 6 brass screws into the opening end, into predrilled holes, and cut off the heads to form the locating pins. Close the hive and then hit the end so that the pins dent the ends of the sides. The sides can then be drilled and lightly countersunk. Obviously you should ensure the sides line up with the end, perhaps packing slightly, before hitting it.

**Pic-
tures**





Setting up the Drawhive

The outside of the box should be treated with a fungicide, to ensure long life.

If you paint your hives, a micro-porous paint is recommended. This is usually called ranch paint, or fence paint. Otherwise, use a wood preserver, of your choice, giving it a couple of coats on the outside only.

After treatment, smear a coat of petroleum jelly on the mating faces of any opening joints, which the bees can be expected to stick together. With the British National, also smear the frame lug shoes and the corresponding rebates in the outer case sides.

Set the hive on a suitable stand so that the stand will provide support below the open brood box, when used in conjunction with a simple box or tray, which is just deep enough to support the open end.

The tray, therefore, should be as deep as your floor plus the bottom rack. The tray side next to the hive is best ½ inch shallower than the other sides.

Until the bees have put some honey in the supers, opening the hive will tend to tip it up.

The tray will prevent this and safeguard the queen. Try to ensure that the stand is level and substantial enough to resist being twisted out of flat when there is a lot of weight on it. If the Drawhive is twisted, it may not function as well as it should.

It is convenient to have stands long enough for two hives, with space between for inspections.

Using the Drawhive.

With decent bees, you will need little smoke. Use your hive tool to pry the end panel open. Once you have cracked the propolis seal, the inner chamber will slide out easily.

An added refinement to the tray, is to taper the top edges slightly, so that the opening end only rests on it for the last few inches. After you have inspected your bees, slide the chamber almost closed and then remove the tray. Make sure the queen is not in the tray.

There are usually a few bees hanging round the open gaps at this stage, especially along the bottom edge.

Clear these with a little smoke, and then push the chamber fully home. Until you put supers on, you can just remove the roof and go in from the top, as usual. You will find it a tremendous boon not to have to hump off the supers and put them back on.

So use your Drawhive brood box for a strong honey-producing colony.

Maintenance

It is enough to apply petroleum jelly twice a year, to the parts that are accessible when open.

Preservative should last four or five years. We prefer to over-winter in a normal brood box, so the Drawhive can be cleaned up and the runners re-greased during the winter. The colony can then be transferred back into a Drawhive at the first inspection.

Good luck with it all and it will in the end save a lot of back strain.

Editor

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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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The last of Apis cerana?

The Asian hive bee is suffering a precipitous decline and is threatened with extinction in its entire native habitat.

This has already happened in Japan where this native bee species has been completely replaced by the European honeybee.

Today in Japan only a few beekeepers and research institutes maintain Apis cerana colonies. In China, out of more than 8.5 million colonies of bees kept in modern hives, 70% are exotic Apis mellifera.

Similarly, in South Korea, only 16% of beekeeping is with native Apis cerana. In the Hindu Kush, Himalayan range, beekeeping with Apis cerana is being replaced by Apis mellifera at such a rate that the population of the native Apis cerana is declining to a level that is no longer viable. From Bee World Dec 11.