



# The **Apiarist**

... High Weald Beekeepers' Newsletter

## Chairman's Chatter

Is it chatter or incoherent ramblings interspersed with the odd useful snippet and what's the difference anyway?

The association is still growing with new members and new colonies at the Horsted Green Apiary in particular. Wealden recently agreed to amend our lease at Horsted to allow us to have 12 hives instead of the 5 previously agreed, for which we are very appreciative. They are very much 'on board' now and recently published an article about the park and apiary.

A highly successful queen rearing activity was run from Horsted by Helen and Malcolm with some 34 new queen cells produced either by cell punching or regular swarm cells and probably half that number of new queens / Apideas were produced. It was called the 'Calm Bees Project' as the bees are a particularly gentle and prolific strain. We are planning to repeat this next year too ... the fates being willing.

The new course which started earlier this year, with one-to-one coaching initially due to CV-19 restrictions, has been very successful and is now operating more or less normally with group sessions at Slab Castle. The first group session was to cover swarming and, given a gloomy start weather-wise, Malcolm had organised an ingenious virtual exercise under cover of the barn.

Obligingly, the sun then came out and we went through various hives and then as if by divine intervention a colony swarmed, and we showed the course participants how to collect a swarm and then go through the parent colony looking for queen cells. They also then witnessed the birth of a couple of queens via 'a caesarean section' aka opening the lid. Perfect!

Why are bees so tidy? Caroline and I disobeyed Malcolm's dictum and took a holiday in June on a narrow boat on the Kennet and Avon canal and jolly good it was too. We had the very best of weather June has had to offer so far, but it had been foul before our departure and a weekly inspection of some colonies was missed. On our return the weather was similarly unsuitable for several days. However, on the following Wednesday the sun broke through, so it was time. As I went through the first colony a large swarm issued from another... so I'd paid the price! It went straight up and off into the wide blue yonder, so I knew it was most likely a caste and not a prime swarm. When I went through that box there was one hatched queen cell and 12 sealed queen cells ...Ah! not irretrievable, I thought. I also thought it was worth popping another lid or two and, yes, every single one was empty and had been resealed

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### FORTHCOMING EVENTS

All "live" events are still cancelled until further notice. We will try and arrange seminars via ZOOM though, so please check our web site now and then, and watch your email in-box.

For Full calendar & details see <https://hwbka.org.uk/event/>

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# A Bee Quiz

By Mark Ballett

This quiz was developed to communicate just some of the amazing information in the book *The Buzz About Bees* by Jürgen Tautz, 2008. You will find the answers on page 17-18.



1. How much honey does a typical colony produce in a year?
2. What is the principal reason bees process and store honey?
3. Why are worker bees normally happy to look after their sisters' brood rather than lay eggs of their own?
4. Why are different areas of brood heated to different temperatures?
5. How far forward does a bee move during the waggle part of the waggle dance?
6. How do bees build such perfect comb?
7. Where do waggle dances take place on the comb?
8. Where do honey bees come in the top ten of domestic animals in Europe?
9. Q: When would a returning worker do a Round Dance and what does it communicate to other workers?
10. How quickly does a colony replace itself with new bees?
11. How should you best mark your hives to make it easy for workers to find their way home?
12. Why shouldn't you wave your arms around to get rid of a bothersome bee?
13. From which direction do bees approach a flower?

...continued from page 1


beautifully. Why do they do that? I surely hadn't lost 13 castes judging by the number of bees at least, so I must assume many had been killed and removed or possibly the swarm that left had multiple virgins in it. There are YouTube videos where beekeepers have found 16 virgins in one swarm, and I know Jonathan Coote has a technique of spreading a swarm on a sheet into separate clumps and finds multiple virgins sometimes ... your secret is out Jonathan...sorry. I could not find a virgin in this hive so it might be time to give them some eggs...just in case. When going through all the Horsted Apiary colonies the following day it was a similar story. One colony had had one sealed queen cell for rather longer than it should have and, yes, it too was sealed and empty. Why did they do that? So they got a frame of eggs as an insurance policy.

Steve, who has been covering both association apiaries for a while and almost single-handedly set up Horsted, is finding the travelling too much and deserves a break anyway so I'll be taking up the slack for the foreseeable future at Horsted... unless anyone else is champing at the bit of course. We really do owe Steve an enormous debt of gratitude for all the incredible hard work he has put in at Horsted and at Slab Castle for that matter.

And on the same subject of swarms, we often hear people talk

about the 'tragedy' of losing half their bees and half their honey crop. I have repeated as much myself on numerous occasions to new beekeepers and members of the public alike without thinking about it too deeply. One even hears folk talk of watching their supers fly off over the hedge.

I found myself thinking about this the other day and realised how meaningless a statement that is without a context. Losing half of 3 full supers is a rather more different proposition than half of one frame but would that really be possible anyway ...seemed unlikely. So, I looked up the capacity of a bee's honey crop, which the learned articles tell me is between 25 and 80 mg. Assuming a healthy colony of 60,000 bees loses half that in a prime swarm then that equates to 1.5lb to 5lb (or between 1.5 and 5 jars if you use 1 lb jars). Not quite so devastating and certainly not worth panicking about. On the upside one could even consider the loss of bees as a contribution to mother nature and the local feral population, and they'll recover anyway ... still hurts one's pride as a beekeeper though 😞.

However, the original statement is still true when posed more rigorously, for if one 'loses half the bees' then one surely also will lose 'half the **potential** honey crop' too. Once they've decided to swarm not much will stop them. Even performing an artificial swarm which will retain the bees will still knock a hole in the stores gathering program for the year... you can't win 😞. 

14. How does a bee know a flower is empty of nectar without landing?
15. Apart from waggle dances, how else do foragers help new recruits to find a new nectar source?
16. Who accompanies a virgin queen on her nuptial flight?
17. What triggers the development of queen, rather than a worker?

18. What is the purpose of the comb?
19. How do bees detect gravity?
20. How do bees respond to changes in demand for different activities required in the hive?

**Answers on page 17-18.**



# HWBKA Beekeeping Taster Day – a tale with a sting

By Peter Coxon



We held our annual beekeeping Taster Day on Saturday 5th June and had a most enjoyable time. We were blessed with glorious weather ... a pleasant surprise and great relief after torrential rain the previous day.

We had 11 participants plus Peter Halford, Talha Dinc and myself. We spent some of the morning talking about the wider world of bees and beekeeping with some history and biology thrown in for good measure... it's always good to have a context. We then covered the sort of equipment that is required should they wish to take up the craft.

After a scrummy lunch courtesy of the wife, we then got gowned up and headed off down to the bees in 3 teams. I thought it a good idea to go through a small Nuc first each as I still recall that feeling of unease when I experienced bees for the first time and wasn't completely confident in the technology of a bee suit. It's a kind of primordial instinct, I guess. However, all went well and then each team opened up a full colony in one of my WBCs.

By divine intervention we had had a swarm arrive in the garden shortly before the participants ... the icing on



*The teams started by inspecting a small Nuc.*

the cake. Not from any of my hives I hasten to add as I found later I still had all my queens. So, at the end day the participants had an additional experience of seeing Peter Halford and I hive the swarm in his Nuc box for some friends of his.

However there was an unfortunate denouement ... a sting in the tale!, which some of you may have read about in a previous communication.


When catching swarms, I always try to keep the cluster intact when possible, and will often gently cut off the branch they are on and pop it in a Nuc to be sure of capturing the queen. When I get them home, I can take my time removing the vegetation and replace with frames at my leisure. I have done this more times than I can remember, and we did this again on Saturday and got all but a couple of bees into the box easily.

Peter came back the next day to collect them and all appeared well although they were rather quieter than I would expect. Also, after Peter left, I noticed an odd sticky, smelly liquid on the ground where they had been which I assumed to be sap from the branch. The branch was from a laurel, and I then remembered tales of folk



*“By divine intervention a swarm had arrived in the garden shortly before the participants – the icing on the cake.”*

expiring in their cars when driving to the local amenity tip to dump laurel hedge clippings transported in the back of the car. This is due to the cyanide from the laurel ... and the alarm bells started to ring. I emailed Peter but sure enough when he opened them to re-hive them a great many were dead or dying.

Bees love laurel flowers and also the nectaries in the apex where new leaves join branches, so it is all a little surprising but sure enough having done a little research on Google I learn that insect/moth/butterfly killing jars used by lepidopterists are often made using chopped laurel leaves. Other trees such as prunus also produce cyanide ... so be careful catching swarms this way ... I will certainly modify my technique. 



# A Horizontal Hive Project

By Julian Fitzherbert

I built a horizontal hive over the winter and was subsequently asked to write about the project so here's how I became a beekeeper and my route to building it. As I'm new to beekeeping this is just what has worked for me so far.

I became a beekeeper after the wild colony in my chimney swarmed twice in June 2020. We noticed the first swarm in the middle of a family croquet game after spotting a dark lump hanging off a branch in a hazel tree at the end of our lawn. Mild concern was expressed by the players but as there was enough rudimentary bee knowledge to realise the bees were no threat, the game concluded without incident. Meanwhile a few texts to our local Neighbourhood Watch WhatsApp group resulted in contact with the Swarm team and shortly thereafter Peter Halford arrived. The bees were still on the branch although quite high up so we cut through the branch and Peter caught them on a sheet, transferred them to a Skep and then to a Polynuc which he collected in the evening.

A few days later the wild colony swarmed again, this time causing consternation to our mowing contractors who arrived at midday just as a loud cloud of bees exited the chimney and headed towards the lawn they were about to cut. This time the swarm was smaller and landed in an Azalea bush at ground level so Talha Dinc was able to gather them up without much difficulty.

I'd been thinking about taking up beekeeping since retiring and taking over our family's 5 acre small holding. Having just given away two swarms as I had no knowledge of how to deal with them I was more motivated to ask how to start. This resulted in Peter putting me in touch with a local beekeeper who has

been able to mentor me. After Marc put one of his National hives in my garden and showed me how to care for it he suggested building a Nuc hive as a learning project. This is certainly a good way to learn about frame sizes (confusing!), and bee space (OK once you understand it). I'm reasonably good at carpentry, have some tools, can build things and cut straight so building a Nuc wasn't especially hard. I made it easier for myself by buying prepared wood that is flat and square which minimises cutting errors. An electric table saw would have been ideal but all I had was a hand saw. I did some research into hive designs and referred to two "Dummies" books for ideas and measurements.

The books include a design for a 5 frame nuc which was used as the basis of a 6 frame design. I use



*The "Dummies" books Julian used for inspiration.*



*The Nuc Julian built with its crown board and lid.*



*Julian Fitzherbert with the finished Horizontal hive.*

Hoffman self spacing frames and these measure 17 inches across the top bar where the frame is 14 inches across, 8 ½ inches deep and 1 3/8 inches wide. This means that the lugs which support the frame are 1 ½ inches long. This seems to be the frame size for National Brood boxes though given how easy it is for me to get frame ordering wrong there's a whole potential study on frame sizes.

Anyway once you have your frame type selected the internal sizes of whatever hive you are building are just an extension of the frame dimensions as you have to allow for the bee space. This is 3/8 inch at the side of the frames and possibly above and/or below the frames depending on what is stacked above or below be it another box, a base, crown board or queen excluder. National brood boxes have bottom bee space in the original design, but both top and bottom beespace designs may now be found in use.

For research purposes I bought myself a wooden national that I could measure to confirm my nuc design was heading in the right direction. That resulted in a bit of confusion as this type of hive takes 11 frames but the fit can be a bit sloppy. It seemed the bee space rule is relaxed to allow greater spacing between frames to allow for deeper cells. I

was accurately following the 1 3/8 inch frame width and the 3/8 inch bee space which was creating quite a snug frame fit for the nuc. As the self spacers on the Hoffman frames project 2/8 inch each side of the top bar this means the spacing between the top bars is 4/8 inch minimum, ef-



*A spacer was installed to prevent the right hand frame from getting too close to the hive wall.*

[Editorial note: This might be unnecessary since the Hoffman side bar 'spacers' can actually butt right up against the side walls since there is no opposite frame here that the bees needs to work on "back-to-back".]

fectively 1/2 inch. Hence this has to be allowed for with the frames at each edge of the hive where the top bar edge must be 1/2 inch from the side of the hive. This gap is maintained by a spacer that prevents the right hand frame from getting too close to the hive wall.

There are no fancy joints with this nuc and the sides are butt jointed (edge to surface) and secured with wood glue and screws. Essentially you make a simple box where the sides are the length of the top bar and the length of the ends is the frame spacing multiplied by the number of frames. The height of the sides needs to be the height of the frame plus a bee space in this case at top and bottom as a piece of varroa mesh is secured underneath with an inspection board and base.

The end pieces are recessed from the ends of the sides to maintain the bee space at the frame edges so the

top ends need to be closed off which provides a lifting handle at each end.

The entrance is a round hole with a rotary gate so it can be closed off.

Once the Nuc hive was built Marc gave me a small Nuc colony with a queen marked Sky Blue (2020) who lived happily in the Nuc for a bit until moved into the National hive. After suddenly spotting a virgin queen in the hive (we missed the queen cell wherever it was) we performed a split and the new queen went into the Nuc hoping that she might get mated even though it was getting into autumn at this point. So we went into winter with my apiary containing Marc's National hive, my National with the Blue Queen and my Nuc with the Virgin Queen who we hoped had mated. I built green insulated winter jackets for both the Nuc and my National which gave them a sort of WBC appearance.

## The horizontal hive

So why did I decide to build a Horizontal Hive? Well really because maintaining a "conventional" hive like a National involves heavy lifting and I'm no longer young. I knew about the Beehaus from Omlet which is a plastic horizontal hive but heard they were not accurately built with gaps and are also expensive. I've not actually seen one in plastic but can believe this because Omlet chicken houses (Eglu) have inaccuracies. This isn't a problem for chickens and plastic houses are easy to clean to prevent red mite. But for bees the Beehaus didn't seem a route I wanted to go.

I also came across advocates of horizontal hives while researching beekeeping on YouTube and somehow found a talk by Dr Leo Sharashkin, a Russian beekeeper now farming in Missouri. He was advocating low maintenance beekeeping following the work of Feodor Lazutin in Russia. That sounded interesting as I was beginning to

wonder if beekeeping might just be a bit too involved and time consuming for me. Further research led me to Dr Leo's website [www.horizontalhive.com](http://www.horizontalhive.com) where there are horizontal hive plans and details on beekeeping. See also [www.horizontalhive.com/gallery-video-picture/natural-bee-keeping-videos.shtml](http://www.horizontalhive.com/gallery-video-picture/natural-bee-keeping-videos.shtml) for a 38 minute presentation on natural beekeeping and horizontal hives.

What I liked immediately about these horizontal hives was that they are well insulated, at a comfortable working height and the frames have cover boards so only a few frames need to be exposed at a time for bee husbandry.

The Russians advocate deep frames, typically 18 1/2 inch deep Layens frames. However, these are heavy when loaded with bees and honey and don't fit regular honey extractors. So I stayed with the 8 1/2 inch deep Hoffman frames that I'm used to. Deep frames give the bees more winter stores as the cluster moves up the frame at 1 mm per day.

## The work starts

I started with the internal part of the horizontal hive which is really just the Nuc scaled up. The wood I used was laminated pine boards which have the advantage of being flat, planed and square so manual cuts which can introduce inaccuracies are at a minimum. However, they are more



*The work on the horizontal hive starts.*





*The "Periscope" entrances fully open.*



*The roof opens towards the front of the hive.*

entrance has a rotary gate so it can be closed and a weather cover (a sort of periscope entrance) which provides extra defence protection. Periscope entrances are believed to help the bees defend against wasp attack and these can be fully closed when vertical or propped open providing rain protection of the landing board.

The picture below shows the inspection board that pulls out at the back of the hive. It's a single piece of plywood which is insulated underneath by silvered polystyrene sheeting and held in place by another laminated pine board. So the underside of the hive is insulated by a pine board, silvered polystyrene and the plywood inspection board .



*The "Periscope" entrances partially open to provide defence against wasp attacks.*

This picture also shows the roof section which is insulated inside with silvered polystyrene over which is plywood. Above the plywood is another sheet of silvered polystyrene as a waterproofing layer and that is covered by feather edge boards. The roof overhangs so that rainwater

expensive.

The picture below shows the two side boards which are 1200mm long and this is 1.2 metres or just over 47 inches. They are butt jointed to the ends which are higher to allow for the cover boards and wider to allow for extra insulation. Three pieces of National hive sized varroa mesh were affixed to the bottom under which is an insulated inspection board.

The hive walls are 4 boards thick on the long sides (front and back) and two boards thick on the ends. The four board thickness results from needing to provide a support ledge for the frames, a support ledge for the cover boards and then a weather layer. The same effect could be achieved using thicker boards and cutting rebates to support the frames and cover boards with the appropriate tools. However, to avoid complicated cutting the stacked boards do the job.

The front of the hive has three entrances and the use of divider boards means that the hive can be split into three. A divider board is like a dummy frame but it also closes off the bee space at the top, bottom and sides. Ideally the bees use the middle entrance and expand sideways. Each



*Inspection board.*



*This picture shows some of the frames which have been exposed by removing the cover boards. The hive is empty of bees at this point.*





*This picture shows the left interior of the hive from the back showing a frame, the left entrance and the mesh floor. Under the mesh is the inspection board.*

does not drip onto the leg supports, the inspection board or the landing board.

The picture below shows how the roof opens towards the front of the hive so the beekeeper is able to stand at the back of the hive unaf-



*This picture shows the bees in the hive at the start of April 2021 and enjoying some syrup. They are occupying 8 frames in the middle of the hive and are bounded on each side by a divider board. The plan is for them to expand left and right.*

ected by bee traffic.

Chains prevent the lid from opening too far. The green circles on the ends of the roof section cover ventilation holes and can be opened as required.

There are three feeder positions though only the left and right feeders are in position. The central feeder hole is plugged. With all the cover boards in place the bees are



*This picture shows the hive in action with bees accessing the entrance. But they are transiting so fast there's only one on the landing board in the shot.*

contained although in this picture the hive is actually empty. Cover boards are 4, 3 or 2 frames wide and the hive can take up to 34 8 ½ inch deep Hoffman National Brood Frames.

So how successful is the hive? So far the bees seem happy in it and were only moved about 4 feet from their adjacent National hive without any problem. They are certainly warmer and drier than they were in the National which leaked and is thin walled. Here the lid fits with a recessed lip that hopefully will keep out the weather and is well insulated. The overhanging roof should also help.

The full sun does not cause any overheating so far so the insulation is working both ways. It remains to be seen if this is the case in summer and if the roof vents are sufficient.

When building another I think I would modify the roof design so that it telescopes over the hive body as that would likely be a better weather seal. Also the roof structure is quite heavy and without being tied down the hive would almost tip forward when the roof is open. That might not be a problem when the hive is full. The hive is certainly heavy but two people can carry it.

The bees haven't stuck down the cover boards with propolis or wax although they did build a bit of brace comb under the feeder hole.


In theory the queen stays in the

brood chamber in the middle of the hive and the honey stores are either side to the left and right so no queen excluders are required. However, just in case and because some horizontal hives have them I built a couple of vertical queen excluders. They can also double as introducer boards if covered in chewable paper so that bees can be combined, in theory at least. These queen excluders are just made of a frame of wood of the size



*One of the two queen excluders built for the Horizontal hive.*

of a divider board covered in a piece of metal queen excluder cut to size.

Many thanks to Peter Halford and Talha Dinc for dealing with my swarms last year and to Marc Mearns for being my bee buddy/mentor and getting me started with beekeeping. Also thanks to the HWBKA online group members. 

# East Sussex Winter losses 2020-2021

By Jonathan Cooté

This winter produced some unexpected and very high levels of colony losses. The probable causes are three-fold but losses were noticeably higher than normal for strong colonies – particularly those along a corridor within about 20-30 miles (50 Km) of the south coast.

## Isolation starvation

The first cause was not abnormal and probably avoidable. It was isolation starvation.

The symptoms were a small cluster of dead bees facing head down into empty brood combs with no food available within easy reach. There may have been ample stores elsewhere in the hive and even pollen substitutes under the crownboard but the colony was probably too small and unable to form a corridor warm enough for the bees to gain access without going too far from the cluster without getting chilled or for the cluster itself to find a safe and warm enough route to the food. This can be more of a problem for smaller colonies on larger brood frame sizes such as 14x12 and jumbo Langstroth. It is less of a risk with larger colonies on either double brood boxes of standard brood frames or 'brood and a half' where in each case the central gap makes an access safer for the cluster to move along to access fresh stores while avoiding the colder outer areas. It is possible that open mesh floors might be a negative contributing factor but keeping small colonies in Poly-hives might be a positive. Having plenty of stores goes without saying but having them accessible in very cold weather is also important.

## The weather

A second possible cause of losses proved much harder to unravel. This particularly affected those of very strong colonies which died out in early spring even though there

were extensive stores of honey and associated pollen still left when the beekeeper discovered the loss.

I think the probable cause of this, which is rather counterintuitive, was a sudden unusually very mild spell of weather (day time temperatures around 18-20° C) lasting for about two weeks in February. Very strong colonies responded to these conditions more than smaller ones and stimulated an incautious rush of brood production, the queen laying up to 2 or even three brood frames of eggs over a short period.

Towards the end of this spell the weather changed completely. It became very dry and quite cold (about 6-8° C with no appreciable rain for several weeks. A strong east/north-east wind persisted throughout this time. Even though the colonies had plenty of honey to keep them warm and enough pollen initially to enable the workers to produce brood food, access to water became the critical issue. Workers in colonies with no water available very close had to fly



Jonathan Cooté

out in considerable numbers to collect enough to meet the colonies growing needs.

It takes several minutes for a worker bee to fill up with water, for instance at a bird bath or nearby pond. The water ingested is very cold, not far above freezing, and drinking it causes a sharp drop in the bee's body temperature and the efficacy of its flight muscles. These need to be at about 30° C for flight to be possible. The bee needs to use enormous energy firstly just to heat up its wing muscles ready for take-off. This might have been impossible but even if the bee succeeded in lift-off it still had to face cold winds and turbulent air currents close to or even in excess of its normal flying speed. The extra

### About Jonathan Cooté

I have been keeping bees continuously for 43 years. I started beekeeping quite by accident in 1977 in Iver Buckinghamshire. I moved to Chiddingstone near Edenbridge West Kent in 1989, then to Rushlake Green near Heathfield in 2002. I joined Eastbourne BKA in 2003 and became an EBKA committee member in 2005, then EBKA Chair from 2008 to 2018. I was elected Chair and subsequently President of Sussex BKA 2009-2015. Passed the BBKA Certificate of Proficiency (the Basic) in 2010 and went on to help more than 30 others to do so. I am still an associate member of EBKA.

I did some beekeeping in the Orne Department of Normandy France where we used to have a holiday cottage and I took live worker samples, located the nest and reported the first Asian Hornets to be found in the region in 2013. Over the last 3-4 years I believe there were about 10 deaths caused by the Asian Hornets in the region – apparently including three beekeepers.

Until recently I managed more than 20 bee colonies in various locations, but I have now reduced to 12, most of which I keep at Herstmonceux Castle. Having finally been caught up by age, I am now interested in making active beekeeping more accessible for the older and less able bodied.

Following a career as a Chartered Surveyor, on retiring in 1999 I retrained as an arborist (tree surgeon). having some 50 acres of mixed woodlands to manage. Through this I became interested in feral honeybees living in trees. I now work with several local arborists in removing and re-homing these bees, when necessary or making it safe for tree work to be carried out close to feral nests. I also often remove feral colonies from buildings and other odd places where necessary and re-home them.



weight and chilling effect of cold water could have resulted in all but a few of these bees failing to return, with successions of others then following and failing too. Without water at this important time, which was particularly acute for large colonies, and no perceptible rain or even night time dew the bees quickly would have lost all their available flying bees.

So symptoms would be a colony with plenty of honey stores and even unused pollen substitutes, some but not many dead or dying bees within and dying or recently dead brood. The queen would be present in the debris but also dead as by now the colony would have lost the means of keeping itself warm.

The wind pattern was quite unusual and a persistent cold belt seems to have extended west from Rye along the line of the South Downs as far as Brighton or perhaps even further west.

Some very experienced beekeepers in this zone lost many colonies, as high as 80% with survivors being mainly smaller colonies.

An interesting possible confirmation of this hypothesis comes from a very experienced beekeeper who lost 4 out of five colonies, all with young queens, all containing 'premature' brood. The survivor with the same attributes had somehow stored a quantity of water under the frame ends and the runners of the upper box.

Many of us would assume water here meant a roof leak so if you find this in the future, assume the bees might know better and leave it alone!

## Late swarming

The third contributor to these depressing events has only occurred twice before in the last 40 years. Again unusual weather patterns were probably the culprit. As beekeepers we are used to preparing the bees for winter with plenty of stores, adequate colony populations, young vigorous queens and good control of pests and diseases. Our aim is to have strong well provisioned colonies going into

winter at the end of the season.

Following this mantra and knowing that finding swarms after mid-August are like hen's teeth hardly anyone would think to examine a colony for queen cells and swarming plans in mid/end October.

Very few beekeepers now do invasive treatments for varroa because of 'better' or 'less intrusive' methods being available. Once these are done and feeding is complete we are very inclined to leave the colony well alone until spring.

For some, this approach last autumn might have proved to be mistaken.

When their colonies were next inspected in March/early April they would have been shocked to find that some of their strongest colonies, even those with very recent new queens were dead.

Nothing they could have done would have prevented this unless by chance, experience or habit they had continued with inspections until at least Mid-late October.

Very careful examination of the dead colony would have provided vital clues to what had gone wrong.

The dead colony would have been much smaller than might have been expected in terms of dead bodies; there would have been no shortage of stores and no dead brood apart possibly from some dead sealed drone cells.

If the beekeeper was in the habit of marking queens and took the trouble to collect all the dead bodies and go through them carefully, a dead queen might have been found. But if she had been found she would have been unmarked.

Putting all of these symptoms together exposes the probability that the bees had actually swarmed sometime in mid-late October or even early November.

This would have been the result of an 'Indian Summer' which we in the South East all enjoyed last autumn. Lots of late flowers around, high daytime air temperatures, plenty

of sunshine and some strong large colonies, even with very new queens are the essential contributors to these fairly rare events.

When this happened in 2006-7 the London Beekeepers Association alarmingly, but somewhat prematurely, announced that Colony Collapse Disorder had arrived in the UK from the USA. The lovely autumn weather in London (with extra heat output from air conditioned office buildings) was even more swarm prone than here in Sussex and many colonies died there as a result


The prime swarm with the old queen, when it left, was doomed as there would be no time to collect enough food for winter/spring use/storage or indeed to allow comb to be built or the colony to be kept warm.

The remaining colony was also doomed. Whilst it had plenty of bees and masses of food, the new queen had about 8 days to emerge, and then about 7-10 days to be ready to mate. By now the weather would have returned to normal and if she had succeeded, colony survival would have been improbable. Unfortunately all the un-related drones in the area would have been thrown out of their colonies and perished about 6-8 weeks earlier.

Her few own drones, if any, remaining after the swarm had left, that then mated with her would have produced strange offspring as they would all have two identical sets of the same chromosomes, all the drones being identical twin brothers of the new virgin queen.

In all, this was a sad end to a very successful colony.

In summary – for many of us, particularly the most experienced beekeepers, the spring of 2020 brought not only Covid 19 restrictions but also much anguish from discovering often huge and unexpected colony losses.

However much we try to learn about bees, nature always has additional tricks to pull even on the more experienced among us. 

# Bait hives

By Steve Davies

During the first of many beekeeping courses, I was made aware of the use of bait hives. Several different types were scattered around the grounds and had varying levels of success. If memory serves me correctly, the most successful was an old National brood box on a first floor roof of the house extension.

Once I had my first nucleus of bees, they were relocated into a wooden hive and the redundant nuc was then employed as a bait hive (without success). Whenever I gathered one of my swarms, I placed a polynuc on the branch they had bivouacked on, only to have the next swarm choose a different tree! At one stage, I had four polynucs scattered around the garden and none of them ever caught a swarm.

I should say at this stage, all of them had foundation-less frames and wax starter strips. Sometimes I added a few drops of lemongrass and once tried a swarm attractant.

I later came across an article by Tom Seeley on bait hives which makes for interesting reading: "[Bait Hives for Honey Bees](#)".

Without going into too much detail, the optimum size is 40 litres, 5 metres above the ground and an entrance of 3.2cm diameter. A standard Langstroth brood box is 42.5 ltrs; a UK National brood box is 34 ltrs. Unfortunately for me, all my hives were now 14x12 (67 ltrs) and I didn't relish the prospect of lifting down a heavy wooden hive from a tree! Time to adapt my polynucs.

## Total volume (litres) for different hive types

Payne's polynuc (with inbuilt feeder)	= 23 ltrs
Payne's polynuc (inbuilt feeder cut out)	= 27 ltrs
Payne's 14x12 polynuc (with inbuilt feeder)	= 31 ltrs
Payne's 14x12 polynuc (inbuilt feeder cut out)	= 36 ltrs
Payne's polynuc with double brood box (with inbuilt feeder)	= 44 ltrs
Payne's polynuc with double brood box (inbuilt feeder cut out)	= 52 ltrs

NOTE: all figures are my own calculations and rounded up/down so please don't take them as gospel.

It is no wonder I failed to attract any swarms as my original attempts were either 23 ltrs or 31 ltrs and therefore too small. I had later cut out the inbuilt feeders on all of my polynucs so my options were limited.

May 2020 – I placed a single 14x12 polynuc (inbuilt feeder cut out), 2.5 mtrs above ground on a branch previously used as a bivouac and the entrance facing south. This did not attract any attention even though it was close to optimum size (36 ltrs).

At the same time, I placed a second 14x12 polynuc in another tree 2.7 mtrs above ground also with the entrance facing south. Surprisingly, this attracted three



Steve Davies, Assistant Apiary Manager for HWBKA, has tried many ways to setup bait hives with varying levels of success. This polynuc almost 3 meters up in a tree was one of the more successful attempts

swarms that year, two of which I was able to 'capture'.

Both bait hives had foundation-less frames, wax starter strips, and a small chunk of old, black brood comb. I also placed 2-3 drops of Lemongrass essential oil on the floor (refreshed approximately every 10-14 days).

Although the successful 14x12 bait hive has again been deployed, queen issues has meant no swarms this year (2021); I say this holding my breath and crossing my fingers. I cannot confirm if this arrangement is a working solution or a lucky one-off but I shall continue to try.

Based on my 'success', I installed two bait hives at



One of the bait hives at our apiary populated by a swarm.



Slab Castle Apiary using single Payne's National polyhive brood boxes (34 ltrs).

Happily, a swarm moved into one of them within a couple of weeks and this was re-housed into a polynuc.

David Evans, aka The Apiarist, has an excellent blog with several articles regarding [bait hives](#) – all are recommended reading.

In light of both Tom Seeley and David Evans' advice, I use the following process:

1. Standard National brood box or a Payne's 14x12 polynuc (inbuilt feeder cut out).
2. Solid floor (a mesh floor can be easily 'closed' with foam/cardboard etc.)
3. Brood box filled with foundation-less frames complete with wax starter strips (or foundation starter strips).
4. A small chunk of old brood comb placed at the back of the box (the dirtier the better) Alternatively, cut out the majority of dirty comb from a frame leaving the top few rows.
5. A couple of drops of lemongrass oil placed anywhere on the floor.
6. Height is not so easy. Standing on a ladder 2.5 mtrs above the ground is not something to be taken lightly especially with a nuc full of bees (it is surprisingly heavy). I have been fortunate enough to have a swarm move in to an unoccupied brood box left on a hive stand.
7. Visibility – easily detected by the bees is straightforward. A good mixture of sunshine and shade helps, just as it does with your hives.
8. Distance from my other hives is approximately 30–40 mtrs although the swarm mentioned on the hive stand (6) was only 2 mtrs away from the other hives.
9. Timing – typically, my swarms occur from the end of May / beginning of June. I put out my bait hives from the end of April / beginning of May depending on the weather. This will give the scout bees plenty of time to discover the hives and bring along all of their friends later 😊.
10. Once established, it is important to check the hives regularly. Monitor the entrance and only investigate when activity is noticed.
11. Re-house the swarm into a nuc/hive as soon as possible. If left for any length of time, the bees will imprint the hive location and you will then have the issue of moving them 3 miles etc.

If you have spare equipment I would recommend trying bait hives. For very little effort you have nothing to lose and everything to gain. 🐝

Online lecture:

## The challenges to beekeeping

Review by Helen Searle



With our first speaking collaboration with Brighton Bee Keepers, we were very lucky on the 17th March 2021 to have Celia Davies speaking on "The challenges to beekeeping". Celia is a master bee keeper and has wealth of practical experience having kept bees for over 40 years. Celia has a Degree in Agriculture, was a biology teacher and lecturer and began keeping bees in 1980. She passed all the BBKA beekeeping examinations, winning both the Robert Hammond Award and the Wax Chandlers' Prize, before gaining her NDB in 1994. She has taught beekeeping since 1992 to a range of students from basic level up to advanced, has been a tutor on the BBKA Correspondence Course for many years and is an examiner at all levels up to, and including, NDB. She has written many articles for various publications over the years and has authored two books: "The Honey Bee Inside Out" and "The Honey Bee Around and About".

This talk covered a wide range of topics, addressing a number of the issues that confront our bees and us, as their keepers. Celia discussed in depth how worldwide climate change was affecting bee keeping, recommending strategies to help our bees with changing weather patterns and resultant environmental changes. Colony health was discussed in detail with a most useful discussion on feeding and treatments. Diseases and pests were succinctly explained and summarised together with suggestions, both natural and chemical, for their prevention and cure. Suggestions for the siting of an apiary were also made. A detailed explanation of the problems that queens may experience was also provided. Finally, there was a detailed question and answer session at the end of the talk which was most informative and helpful to our understanding of these wonderful creatures.

The range of Celia's talk was extensive and all the information was delivered with Celia's overriding good humour. I am sure we all learnt a great deal. On behalf of the association, I would like to thank Celia.

Hopefully this will only be the beginning of jointly hosted talks with other bee keeping groups. 🐝

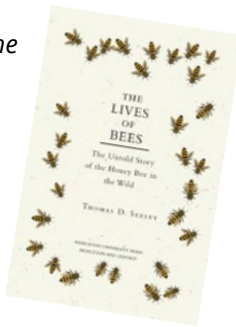
# Book review

By Paul Lindström

*The Lives of Bees: The Untold Story of the Honey Bee in the Wild* by Thomas D. Seeley.

I believe this is the latest book by Thomas "Tom" Seeley, published in 2019. It's a lovely in depth yet accessible text on the latest research on how bees can develop resistance against varroa without any mechanical or chemical treatment. But it's much more than that – it's also a unique account of how feral honey bee colonies live in the wild, more or less undisturbed by managed beekeeping. Other books by Tom Seeley are *Honeybee Ecology* (1985), *The Wisdom of the Hive* (1996), *Honeybee Democracy* (2010) and *Following The Wild Bees* (2016).

One term that Seeley references quite a lot in the book is "Darwinian Beekeeping", and I think this is a phrase coined by him, first mentioned in his 2017 [article in the American Bee Journal](#). Tom Seeley was inspired to take this approach to beekeeping after having attended a "[Bee Audacious](#)" Conference in




California in December 2016. The strapline to Darwinian Beekeeping is "An Evolutionary Approach to Apiculture". Tom wrote about this recently in the excellent blog "[The Beelister](#)" published by the Scottish Expert Beemaster Ann Chilcott.

But to the book. Tom Seeley gives examples that in as few as 6 years of selected breeding you can achieve a strain of bees that has a natural resistance against Varroa. This was very encouraging to read, and surely gives us hope that long term we can help the bees reach this state, not only in the wild, but in responsibly managed colonies. The experiment started in 1999 on the Swedish island Gotland, where 150 Varroa free colonies were setup in isolation. They were then introduced to Varroa, and after a couple of years more than 80% of the colonies died out over the Winter (only 8 of the original 150 hives were populated in 2003). But the surviving colonies developed resistance, and when inspected 15 years later the number of colonies has started to grow steadily.

Professor Seeley lists a number of things the hobby beekeeper can do to reduce the risk of infection of

colonies, as well as strengthening the resistance against Varroa. One is to try and reduce drifting by keeping the hives as far apart as possible. This might not be easy for a hobby beekeeper with limited space in the apiary. But I took the action to put a bigger space between our hives when I did splits this season with this in mind, so we can do our best to make the conditions for our bees a little better. Every small step helps I think. Another tip I can act on is to avoid moving brood frames between colonies. An advice I still have to come to grips with is to destroy colonies that show signs of heavy mite infestation, before the robbing by neighbouring colonies starts, and with that the rapid spreading of Varroa between hives. But I'm sure he is right – it's just tough to make such a brutal action I find.

But the book is about much more than the breeding of honeybees or "Darwinian Beekeeping" – it seems that professor Seeley has decided to summarise all he has learned about honeybees over the years in this book, and it's full of fascinating facts about these lovely creatures. I can strongly recommend it. 

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## A brief summary of the latest HWBKA Committee meeting

The committee discussed how we can better help beginners acquire bees, ideally locally raised, and at a reasonable price. Exactly how this can be done, and what price should be recommended for different types of colonies (overwintered available early in the Spring, or colonies made from splits available later in the season etc) wasn't decided on in the meeting, but Jo Gore will take the lead on this and a plan made before the next beginner's course starts in 2022. There has been a discussion weather the association should apply for "Charity status", but further investigations show that the benefits

of this probably won't outweigh the probable drawbacks. The issue was therefore dropped.


We will investigate if our members could have a subscription to the magazine BeeCraft at reduced price.

We will continue to have a discussion with the Crowborough Council regarding accommodation for the club in the locality; ideally both a club house and an apiary. Wealden have offered us the possibility of another site at Horam but it is out of area and has been offered to EBKA. The membership is on track to match last season's number. We hope to be able to reintroduce live Beebanters again

at the end of June, and focus will be on holding them at the pub Rose & Crown in Mayfield.

It was agreed that the existing term for key committee members would be 3 years except in exceptional circumstances.

There was discussion over possible refunds for students who start but don't finish the course. In general it was agreed that course fees are non-refundable except in exceptional circumstances.


The next HWBKA Committee meeting will be on **Thursday 15 July** – suggestions of issues and projects are welcome! 



# DIY: Simple Cheap Varroa Counting Board/Floor for a PolyNuc

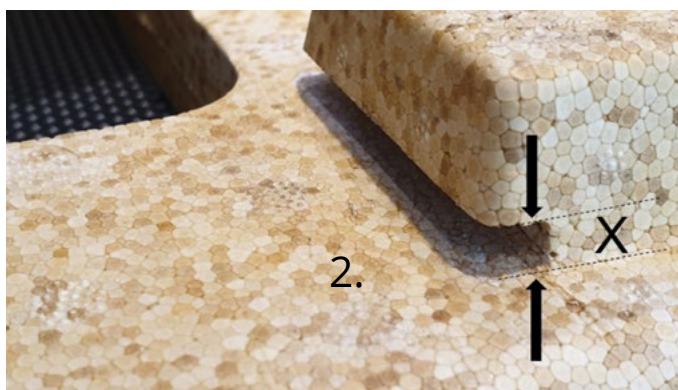
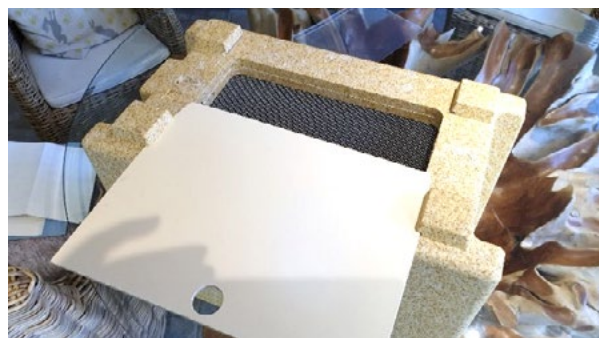
By Peter Coxon

No one appears to provide PloyNucs with a removable varroa counting board / floor ....so I made my own as below. Either for varroa counting or simply to keep the little darlings cosy and warm in the winter.

1. This is for a Maisemore PolyNuc, which I have swapped over to from the Paynes PolyNuc for various reason but the same idea works equally well on my Paynes PolyNucs which I have also modified.
2. In each of the 4 feet, using a sharp modelling knife cut a groove with a height 'X' equal to the thickness of the board you intend to use for the floor. This was ~5mm in my case. Dress to size with a file. If the main objective is to keep them warm, make the groove flush with the floor. If the main objective is to count varroa you may want to cut the groove so that there is a gap between the board and the base ...otherwise you might scrape all the varroa off when removing the board.
3. Cut a piece of plywood, Correx or similar to size. In this case 330mm x 250. Using a black permanent marker or similar draw grid squares in the normal manner to facilitate counting. Chamfers on the leading edges will facilitate easy insertion.
4. A finger hole, handle or similar might facilitate easier removal too. 



1.



2.





Photo by Paul Lindström

The seventh story in a multipart series called “Three Bees”

## A Brutal Truth

By Laurel Lindström

“Still no sign of him?” whispered Twirly to Curly who was struggling to come awake after his long night’s vigil and final collapse into sleep. It was chilly so the two hungry drones huddled together, waiting for the temperature to rise as the sun broke through clouds scudding high in the sky in a rising wind. Curly watched carefully as a couple of his sisters worked away blocking a random gap between their set of honeycomb frames and the edges of one above. The three bees had never been into that one because the absent Burly, and Curly and Twirly were all too big to get through the grill between the two sections. Nor was Mother small enough to get upstairs, only the worker bees could squeeze in. Curly watched as more and more bees went up, their honey stomachs full of nectar. They never stopped to feed the drones who were left to their own devices these days. Curly listened to his little brother twittering on about Burly and about how Twirly didn’t much want to go in search of breakfast without him. “I can’t manage to push through the crowds, what with my dodgy legs. I need Burly to shove everyone out of the way and hold me in position to slurp at the honey you see.” Twirly continued in this conversational vein, encouraged by Curly’s wise nodding and occasional straightening of his antennae to express interest.

But Curly’s mind was elsewhere. He had a sense of change in the

hive, not least because the wind was blowing stronger and the propolis work seemed to be accelerating. More and more of his sisters were working on the gaps in the hive walls, sticking frames hard into place, gluing up the layers, bridging frames with honeycomb and fixing the end frames to the hive walls. Curly was becoming anxious. This was not just about blocking drafts, this was about more than the weather.

He linked a foreleg into one of Twirly’s feeble limbs and moved along the edge of the hive to where a handful of drones were gathered sipping at breakfast and trying to keep out of the way of the worker bees. They chatted amongst themselves between sips as their sisters crawled over them. They were nursing bees moving to and fro between brood cells, pollen stores and honey stores to feed the grubs. After many weeks of observation, Curly understood the nursing bees were preparing to seal the grubs into their cells, so that they could grow into baby bees in the coming days. This was normally a restful process to watch. But it seemed to Curly that the hive’s mood was becoming increasingly impatient. And something else was odd, these brood cells were uniform in size, all quite small with no larger cells for drones or giant queen cells for new princesses. Odd.

Curly remembered the day when he and his closest brothers were born. Along with countless other

drone honeybees they had chewed their ways out of the oversized cells. Burly had shoved his way out of his cell, rather than chew his way out. The wax wasn’t very tasty Curly had agreed and yes it did make quite a mess of one’s jaws and hair. Curly had to admit that once Burly had squeezed his way out he was a magnificent specimen. When Twirly was being born though something had gone wrong, a fall of comb it might have been. Curly couldn’t remember, but it had meant that Twirly’s little legs and wings had been damaged, reshaped and not very strong. Since then Twirly had depended on Burly for muscle and Curly for guidance. Twirly’s nerves were extremely fragile. Daily existence was drama enough for him. When Burly set off out into the light the first time, Twirly had gabbled and squeaked for the whole day until Burly returned along with a gaggle of other dazed drones. When Burly had set off the second time Twirly had been less worried. Curly knew he believed that Burly would return. Maybe he would, but listening to other drones running through the names of the missing, Curly was unconvinced.

Twirly was still going on about how important Burly was and how much he missed him when Curly noticed a small group of bees heading towards them. He instinctively steered Twirly away and under an outcrop of comb. “Shut up would you. Would you just shut up” Curly hissed giving his



brother a firm push. "Ow" said Twirly. "What are you doing, we haven't had enough breakfast and we could have asked those lads if they've seen Burly anywhere." Rubbing at his bruised thorax Twirly moved towards Curly who was peering out and who immediately shoved Twirly back. Curly was staring in horror at a group of bee vandals attacking one of the drones. Twirly and Curly had just now been chatting with him and now the drone was surrounded by a group of aggressive and violent worker bees. The drone was crying out in terror "let me go, let me go", but his sisters muffled his sound as they held him down. Curly watched as two bees positioned themselves on either side of the drone and each ripped at a wing with jaw and claw. They soon finished their gruesome task and turned the wingless drone over to a couple of other workers who led him away from the group. In soothing tones they were saying "there, there. It's all over now. No need to fret. You're alright. It's done. Don't think any more about it. It's finished, there there."

Curly watched as they gently edged the wingless and traumatised drone away. Curly wanted to assume they were heading for another part of the hive, perhaps somewhere new wings could be fitted. But he couldn't reconcile the ruthless attack, with the gentle words and the care some of those very same bees had shown to them all just a few weeks ago. In his heart of hearts, and more importantly in his brain, Curly knew the two could not be reconciled. Twirly was cross, fidgeting to get past his brother. With a clumsy shove Curly pushed him further back and watched in horror as another drone underwent the same procedure. By this time the rest of the diminishing group of drones was panicking, struggling to get away to somewhere else in the hive. But they were blocked by a second group of bees who had appeared unseen to keep the drones in place.

Curly overheard one of the reinforcements say something about needing to finish this work and get back to the nest to keep Mother and the brood warm enough. "We're wasting too much energy on these guys. We should have taken care of it weeks ago when they first started coming back." Curly heard an older worker answer: "They're only good for one thing, except this lot obviously" and the air buzzed with high pitched bee tittering, and rude gestures. "I've seen it a few times coming back from foraging. The virgin princesses and the drones. One by one she takes them. She lets them hold her then they explode. It's not a pretty sight" another added, "but at least they die happy hugging a queen." And the others bee-giggled again. "Not this lot though," said the first to more giggles. "This lot couldn't make it, couldn't handle it. And if they think they can stay here for the winter, they've another think coming." The duty bees continued to joke, watching the wing removers and the housekeeper bees remove the amputated wings. The number of drones was falling.

"Stay here and don't move" Curly hissed at Twirly as he started to work his way around his brother and up the honeycomb frame. Curly wanted to see where the wingless drones were being taken. "Where are you going? Don't leave me, don't leave me Curly I can't manage. I can't be by my-

self." Twirly was whimpering. "I need you to be very quiet now, Twirly" Curly said. "I need you to trust me and stay here and be very, very quiet. Don't move. On no account do you move. You stay here." He left Twirly muttering to himself about how cold it was getting on his own and it was worse because he hadn't had enough breakfast, and how was he expected to cope with so much excitement and so little comfort, so little food all alone. Curly had reached the top of the frame before Twirly finally stopped whining. What Curly saw turned his cold insect blood even colder. He watched a steady parade of wingless drones being taken one by one to the hive entrance. Once there guard bees roughly shoved them out onto the landing board. Curly couldn't see what was happening but his every sense was quivering, alert to an awful terror, a sensation of horror seeping into every pore, a sensation of treachery, of betrayal. Curly shook with fear, wings quivering and antennae trembling in the morning chill. Despite the light getting stronger the hive wasn't really getting much warmer. Curly decided to risk getting closer to the entrance to see for himself what was happening on the landing board.

Twirly hadn't paid much attention to his brother's instructions, being too preoccupied with his own tummy and nervy anxieties. He almost certainly didn't catch the urgency



Photo by Paul Lindström





## The Bee Quiz: Questions & Answers

Based on the information in the book *The Buzz About Bees* by Jürgen Tautz.

**1. Q: How much honey does a typical colony produce in a year?**

A: It is theoretically possible for a colony to collect and process as much as 800 kg of honey in one season though 300 kg is more likely in practice. We as beekeepers don't see this because it has a high turnover in the hive. They will also collect about 30 kg of pollen and several hundred grams of propolis.

**2. Q: What is the principal reason bees process and store honey?**

A: The principal reason bees produce honey is as a fuel source to heat the hive, shape the comb and programme new worker bees. Rather than flowers being supermarkets for bees they are more like filling stations.

**3. Q: Why are worker bees normally happy to look after their sisters' brood rather than lay eggs of their own?**

A: Worker bees are content looking after their mother's brood rather than their own off-spring because they are more

closely related to their sisters than they would be to their offspring. It is simply a better evolutionary strategy. In strong contrast to a bumble bee nest where all hell breaks out when the queen starts to produce drones, as this is not the case and they both, the bumble bee queen and worker, lay eggs in competition for fathering the next generation.

**4. Q: Why are different areas of brood heated to different temperatures?**

A: Heater bees vary the brood temperature to produce workers with different characteristics, better suited to certain functions in the hive. They can and do control the characteristics of the developing brood by temperature alone. Worker bee pupae of honeybees receive individual and different 'personal' heat treatments from heater bees occupying the empty cells dotted around brood nests.

**5. Q: How far forward does a bee move during the waggle part of the waggle dance?**

A: The worker doesn't move during the waggle bit of the dance, but rather leans forward with legs placed firmly on the lips of open comb. This allows the horizontal vibration to be transmitted all the way across the comb to attract others

and can be 'heard' in spite of all the other the noise and activity in the hive. For this to work well workers introduce gaps at the edges of the frames and the comb temperature needs to be below 34° C, both are important to improve signal transmission.

**6. Q: How do bees build such perfect comb?**

A: Rather than being a feat of precision engineering by the workers honeycomb is so perfectly formed because it is heated by workers to a temperature where it flows into shape after being crudely constructed, utilising the natural properties of viscous fluids when the wax is heated to between 37° C and 40° C. To achieve this they raise their body temperatures to over 43° C. Interestingly, the comb does not consist entirely of wax. Bees also add resin, allowing the possibility of being able to adjust the properties of part of the comb, depending on its various uses.

**7. Q: Where do waggle dances take place on the comb?**

A: On any one day waggle dances are conducted on a single 10 cm by 10 cm area of comb that carries chemical sig-

## Rent a honey extractor from HWBKA



*The new SAF Natura radial 6-frames extractor*

The association has three extractors available for rent. One new SAF NATURA radial 6-frames extractor, and one older tangential 3/6-frames extractor (pictured). We also have a smaller 3-frames tangential, kindly donated by Don Bastick.

You can rent them two days at a time. The newer 6-frames radial extractor cost £10 for two days (£20 deposit)

The older 6- and 3-frames tangential extractors cost £5 for two days (£15 deposit).

Included in the rent is a honey bucket, a sieve and an uncapping fork, if required + instructions for use.

Note that the deposit will be forfeit if returned late, damaged or dirty. Severe damage/repairs will be charged at cost.



*The older tangential 6-frames extractor*

Two of the extractors are stored by Paul Lindström in Southover (outside Burwash). The older 6-frames tangential is stored by Lynne Curtis at Lynne's Organic Farm (just outside Crowborough). Bookings and inquiries through Paul, see contact info below.



For info, availability and booking call either 01435-88 35 65 (preferred). Or call or text mobile 07833-088 766. Or email: [the.hwbka+apiarist@gmail.com](mailto:the.hwbka+apiarist@gmail.com) • Address: The Clock Tower, Southover, Spring Lane, Burwash, TN19 7JB

natures identifying it as the dance floor. If you move it to another part of the hive the workers will find it and dance there.

**8. Q: Where do honey bees come in the top ten of domestic animals in Europe?**

A: Through their pollination of crop plants, honeybees are the third most valuable domestic animal in Europe, after cows and pigs. They are also the most important agent in the maintenance of flowering plants.

**9. Q: When would a returning worker do a Round Dance and what does it communicate to other workers?**

A: A Round Dance is an alternative to a Waggle Dance for sites close to the hive. It is done once the dancing bee has perfected its flight there and back, perhaps after about 10 flights, and just communicates that there is a certain type of nectar source nearby, less than 50 to 70 metres away. It doesn't indicate direction or distance, like a Waggle Dance. The dance only provides information about the feeding site, what to look for, and that it can be found close to the nest. For instance, a bee that returns from a cherry tree will smell like cherries, and a cherry tree can be found easily enough after a few flights around the hive.

**10. Q: How quickly does a colony replace itself with new bees?**

A: In a colony of 50,000 bees there is a daily death rate of 500 bees, or about 1%. The entire colony, with the exception of the queen, being replaced within four months.

**11. Q: How should you best mark your hives to make it easy for workers to find?**

A: Honeybees have an innate sense of colour. Given the choice of various colours, naive bees will fly towards yellow and blue and can 'see' ultraviolet light. However, the poor optical acuity of bees means that they resolve the fine detail of objects, and flowers, only when they are a few centimetres away. But exactly what a bee can see depends how fast they are flying. When flying at 30 km an hour the colour vision is switched off and they are colourblind. Their colour vision is also less effective on their way home, even in slow flight. So, hive markings in the form of patterns, such as horizontal and vertical bars, better aid bees to find their correct nest than

colour alone, explaining the European tradition of decorating hive entrances with pictures.

**12. Q: Why shouldn't you wave your arms around to get rid of a bothersome bee?**

A: Bees, like many insects, see things in 'slow motion'. Rapid movements that appear blurred to us are perceived clearly at each stage by bees. Sudden hand movements, like those that fearful people make when fending off bees and wasps, offer the most easily recognised goals for attack. Stings in the areas of people's mouths are caused mainly by the movements of the lips while speaking.

**13. Q: From which direction do bees approach a flower?**

A: In general bees land on a flower against the wind. This has nothing to do with the strategy of human pilots in order to slow their landing speed; nectar-seeking bees are following an odour trail leading them to the flower.

**14. Q: How does a bee know a flower is empty of nectar without landing?**

A: Foragers that take the last drop of nectar mark the flower with a chemical 'empty' signal. The chemical signal fades about as quickly as it takes the flower to replenish the nectar store. Bees that approach get the message before they land and do not waste time trying to extract nectar from an empty flower.

**15. Q: Apart from waggle dances how else do foragers help new recruits to find a new nectar source?**

A: Dancing bees will help the recruited bees in the field to find the nectar source. Although they do not leave the hive together they will circle the goal in large loops while producing a loud buzzing whilst simultaneously opening their Nasanov glands to extrude geraniol. Interestingly, bees have no true sense of hearing but the buzzing is thought to be an unintentional result of the way the wings are employed to produce turbulence. This 'wake turbulence' stays in the air for some time, capturing the geraniol and leaving a chemical signpost as an additional guide to newcomers.

**16. Q: Who accompanies a virgin queen on her nuptial flight?**

A: Like humans, bees have very low reproduction rates of fertile females so a virgin queen is very valuable. She

is accompanied on her nuptial flight by twenty or so close attendants and a swarm of workers that were once thought to be just engaged in mass orientation flights taking place during the mating season. Foraging activity is greatly reduced during the period that these mini swarms assemble.

**17. Q: What triggers the development of queen, rather than a worker?**

A: It isn't just a diet exclusively of royal jelly that makes a worker into a queen, the components of the royal jelly are also altered: a sugar content of 35% hexose results in a queen, but simple workers will develop should this be just 10%. Queen larvae are also visited ten times more and fed more.

**18. Q: What is the purpose of the comb?**

A: It is not only living space, food store and nursery, but an integral part of the superorganism: skeleton, sensory organ, nervous system, memory store, and immune system. The comb and the wax from which it is constructed are not only entirely produced by the bees, but also an inseparable part of their lives.

**19. Q: How do bees detect gravity?**

A: Bees possess cushions of sensory hairs at all their joints, These are stimulated if gravity causes single parts of the body to move like a pendulum, or lever, relative to one another. Sensory receptors in these cushions can in this way detect the direction in which the force of gravity acts. They are also able to detect the earth's magnetic field and use this to keep neighbouring combs parallel even if not straight.

**20. Q: How do bees respond to changes in demand for different activities required in the hive?**

A: In addition to the heat conditioning received in the brood nest, having different fathers means that workers have inherited differing levels of sensitivity to environmental and social signals. Different individuals have different thresholds to cues and signals that release behaviour. Certain individuals will begin to heat after only a small drop in brood temperature, while others will respond later. In this way the colony as a whole responds optimally to important changes. They also use dances to encourage foraging and tremble dances to discourage it, both accompanied by beeping.

