

BBKA News

The newsletter of The British Beekeepers' Association,
incorporating the **BRITISH BEE JOURNAL**



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Collecting a swarm. Photo by David Wootton.



Drone-laying Queens

Can you recognise signs of a drone-laying queen and laying workers? They may be the result of poor 2012 mating – see page 5.



Simple Plant Propagation

A step-by-step guide showing how you can raise new plants by grafting starts our new series on page 15.

Swarms and Beekeepers — Are you Involved?

You might be surprised to see an article about swarms so early in the year and be tempted to feel that my calendar is 'out of sync', but the subject of swarms and the BBKA Website Swarm Collectors List has been the source of much comment of all types.

Overwhelmingly, the majority of comments received, both from members and from the public about this service, which is provided by BBKA members through information available on the

BBKA website, have been very positive. There have been some critical comments and these might be the result of facts being distorted or perhaps because members were not fully informed or involved in the process. This needs to be addressed in advance of the swarm season so I hope you will read the article on page 18 and get involved in the swarm collection system in 2013.

David Teasdale,
BBKA Trustee



Defra Consultation

Respond to proposals for policies on controlling pest and disease management before 9 March. See page 20 for full details.





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President's Letter



As we have yet to elect the BBKA Chairman for the coming year, I have been asked to reflect on the past year, and look to the future and at the role of President. The President is a trustee, but the Chairman carries the main responsibility for the integrity of the processes of the Executive committee and has to ensure the Executive discharges its responsibilities for governance. The President supports the Chairman and Executive,

and the position encapsulates the public face of the BBKA, helping to achieve the BBKA's aims and objectives by networking with key partners and decision makers and undertaking a holistic view of the charity and its future.

One of the most significant operational changes made in 2012 was to develop a strategic plan and move the operational centres from a committee structure to one of lead trustees. There is a comprehensive article in August 2012 *BBKA News* on this new approach. The principle advantage of this is that all trustees have ownership of the strategic plan, and from these objectives action plans are developed by the lead trustees within a tightly defined budget which gets signed off by the executive.

The problem of income stream was a major concern of mine when I took office last January. I retired as General Secretary in 2008 and in four years, from an organisation that relied on members' capitation as its main source of income BBKA was receiving over fifty percent of its income from sponsorships. This focus does not stop at the easier route of raising income for specific projects; we need to obtain sustainable sponsorship to fuel our increasing operating costs. Your trustees are just completing their 'vision' for the raison d'être of the BBKA for the next ten years to better enable fund-raising activities. I think the future of the BBKA lies in its ability to concentrate on being an enabler rather than a governor.

The potential strain on people and resources in educating new members and retaining their interest in beekeeping is also a major issue. BBKA had six thousand new members last year, but membership only increased by two thousand as four thousand did not renew their membership. BBKA has commissioned two projects to address this issue. Through working with a PhD student at Lancaster University to conduct a comprehensive survey on leavers, we hope to achieve a better retention rate of membership especially during the first few years of taking up the craft and the results should be available in the spring. We also have David Blower, the new Regional Education Coordinator, who is reviewing the approach to training in area associations to develop best practices.

Finally, in 2014 the ADM will need to appoint six new trustees (five Executive members and the President). Please try to persuade any potential candidate in your local association to contact one of the existing trustees for a confidential chat. We need more than six nominees if there is to be an election.

Martin Tovey, BBKA President

Cover photos: Main image: David Wootton; Top right: Richard Ball; Middle: Daniel Basterfield; Bottom (of an adult Small Hive Beetle): Courtesy of The Food and Environment Research Agency (Fera), Crown Copyright.

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EDITORIAL

Editor: Mrs Sharon Blake, Stratton Court, Over Stratton, South Petherton, Somerset, TA13 5LQ. Tel: 01460 242124
Deputy Editor: Dr Christine Knott, Tel: 07765130203
Design: Roger Cullum-Kenyon
 All editorial enquiries and submissions should be sent to the editor at: sharon.blake@bbka.org.uk

ADVERTISING

Julia O'Gorman; Email: advertising@bbkanews.org
 Tel: 01279 505438

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CONTRIBUTORS

Regular contributors: David Aston, Dr Sally Bucknall, Margaret Murdin, The Forager, Rowland Molony and David Baldock.

CIRCULATION 23,170

Please send any alterations for direct mailing, via your Association secretary, to the BBKA Members' Register.

OPERATIONS DIRECTOR/ GENERAL SECRETARY

Jane Moseley, National Beekeeping Centre, National Agricultural Centre. Stoneleigh, Kenilworth, Warwickshire, CV8 2LG.
 Tel: 02476 696679 Fax: 02476 690682
 Email: jane.moseley@bbka.org.uk
 Website: www.bbka.org.uk

In the Apiary

Now that February is here with lengthening days we can start looking forward to spring and hope that this year the weather will favour queen mating and honey production. Usually in February the weather is mixed and uncertain, but there are often some warm, dry, sunny days when we and the bees will want to venture out. When you do, have a look at the front of the hive as there may well be some dead bees blocking the entrance. These will be the older winter bees that have died naturally but whose corpses will not have been cleared. Slide the hive tool in carefully to clear any debris and ensure that the entrance is clear. Watch to see if the bees are flying and if they are bringing in pollen. If they are, you may need to remove the mouse guard as this can knock off the pollen loads and even though these are not large they are vital at this time of year.

The bees should be making cleansing flights to void the waste which they have stored over the winter. The bee's rectum is an interesting organ in that it can expand to accommodate the build up of waste materials when the weather is too cold for them to venture from the hive. If at all possible bees will avoid defaecating in the hive, and at the first signs of warmth they will fly and void the waste nearby. They will also be out looking for early forage, particularly pollen. So snowdrops, mahonia, early crocus or cherries are useful plants to have close to the apiary. This pollen is necessary because the queen will be increasing her laying rate as the weather becomes warmer and forage becomes more plentiful. The pollen is an essential ingredient of brood food which nurse bees produce and feed to developing larvae.



On sunny, warm days bees may begin to make cleansing flights, and, if they are lucky, bring back some pollen (the mesh is pressed forward for photography). Snowdrops are a possible forage plant. Photos by David Wootton.



Stores are used up rapidly in February to provide energy for the bees to increase the temperature of the brood nest from 20°C (which is the temperature at the centre of the cluster when there is no brood) to 34.5°C (which is the temperature required for brood). Stores are also used to produce brood food. So at this time there is a danger of starvation and large colonies with a young, fecund queen are particularly vulnerable. It is, therefore, essential to check that colonies have sufficient stores; to do this it is best to heft the hive. Hefting is done by holding one side of the hive and lifting two legs off the ground. If it feels very light the colony probably needs feeding. If you cannot heft the hive then lift the crown board and very quickly have a look. If the bees are clustered up at the top near the crown board then they are probably short of food and need feeding. It is still too cold for the bees to come up from their cluster to take liquid feed so a pancake of fondant can be placed directly over the top bars. Cover it with cling film to stop it drying out. Alternatively a bag of granulated sugar can be given. The bag is dipped in warm water, a few small cuts made with a hive tool and it is then placed over the feed hole in the crown board and surrounded by a super. Make sure the roof is replaced properly so drafts are kept to a minimum.

In February and March the number of adults in the colony is at its lowest as the older winter bees work themselves to death and the young bees have not yet increased sufficiently in number to replace them. When the queen first starts laying in early spring these winter bees act as nurse bees and feed the larvae. As the young bees take over the nursing duties the winter bees forage and usually die after a few days. Bees have a store of glycogen which they use for energy when flying. Once it is used up they cannot replace it and they die naturally.

As the queen increases her laying rate there will be a time, in late February or March depending on the weather, when there will be more brood in the colony than adult bees and so the nurse bees will be fully stretched with feeding duties. They will have little time for other in-hive duties like removing debris and corpses, which is why there may be a blockage by the entrance.

No matter how much you are tempted, unless it is essential, avoid opening the hive to look inside. The bees have to work hard to maintain their brood nest temperature. They can chill easily and will use up the stores much more quickly in bringing the nest temperature back up again. Wait until the currents are flowering before opening the hive and doing a quick inspection.

If you have treated for varroa, pollen is coming in, the entrance is clear and there are enough stores then all should be well. Now is also the time to clean all the spare equipment, read the books, browse the manufactures' sales catalogues and prepare for the March exams. It is also time to get on the BBKA's website and purchase tickets for the BBKA Spring Convention.

Last year was one of the wettest on record and many queens were unable to get properly mated so I expect to have some drone-laying queens in my colonies (see the article on this subject on page 5). Pollen is going in so I hope the queens are laying, but I will have to wait for warmer weather to find out if they are running out of sperm. Like everyone else I can only hope.

Margaret Murdin,
Ormskirk and Crosten BKA

Winter Queen Failure: Drone-laying Queens and Laying Workers

Very shortly we will have suitable weather for our first full colony inspections of the spring. Undoubtedly there will be some disappointments with colonies which have not survived the winter. Due to the poor summer weather in 2012, I expect a significant number will be showing the signs of queen failure.

Queens have a very short time-window in which to mate; the first three to four weeks of their adult life. If the mating goes well, each queen will have received sufficient semen to last for her egg-laying career; two or three years on average. But if mating is poor, queens simply cannot go out later and try again. Thus when we have a wet and cold summer we have the prospect of poorly mated queens to consider, and this will often show up in colony losses during the subsequent winter.



Brood comb held at an angle, showing elongated drone in worker cells and resulting unevenness in comb. Photo courtesy of Fera, Crown Copyright.

The problem

There are two situations arising from queen failure, namely drone-laying queens (DLQ) and laying workers (LW). The former arises when a queen is present but can only lay unfertilised (i.e. drone) eggs, the latter when the queen has been lost and in her absence a small number of workers start to lay unfertilised eggs. In both circumstances the colony's ability to renew and replace lost workers is compromised, hence the colony is in decline unless we intervene. Also in both circumstances, there are drones being raised at the wrong time of year, which leads to unusual brood comb alterations that should be visible even in the remains of a dead colony.

Workers recognise drone larvae (probably by their scent) but do not object to them appearing in the smaller worker cells. They continue to attend to them and feed them in quantities appropriate to drones, and will elongate the worker cells to accommodate the growing larvae. When drones develop in worker cells a very characteristic pattern to the capped brood results, i.e. worker cells that are elongated and prominently domed. Even when the drone brood has emerged, the signs of elongated cells remain and a once uniform brood comb can look, if turned at an angle, more like a miniature mountain range.

A DLQ will look and smell just like an ordinary healthy queen, which in the most part she is. Apart from a very occasional defect or deformity, her drone laying comes about from her having insufficient stored semen; nothing else need be wrong with her. Thus she is still courted by the workers and she still goes through the motions of inspecting and measuring cells, and choosing, subconsciously, whether to fertilise each egg as it is laid; it is just that the tank is empty. An unfertilised egg will of course develop into a drone, and with a DLQ we generally see a well grouped, consistent brood pattern, but the obvious problem is that it is drone brood, even in worker cells. There will normally be a transition whereby a DLQ progressively lays more 'duds'.

The signs of laying workers (LW) are similar, but for a fundamentally different reason. We consider the workers to be sterile, even sexless, but in truth there remain vestiges of ovaries within each worker. The presence in an ordinary colony of a queen and of developing brood ensures that these vestigial ovaries remain inert and unused. This control is effected by the presence of pheromones produced both by the queen and in the odour of developing brood, and these serve to give the colony its cohesion and purpose. However, if the queen is lost and no replacement can be made, within three weeks there will be neither queen nor brood in a colony. Worker ovaries will begin to develop to the degree that some workers will start producing and laying eggs. Although they have the vestiges of ovaries, workers do not have the remaining reproductive organs with which to mate,

nor do they have any inclination to take mating flights or ability to attract drones. Thus those laying workers are doomed to always lay unfertilised drone eggs. Ironically though, the subsequent presence of (drone) brood laid by laying workers inhibits further

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ovary development in their sisters, and hence a colony reaches some sort of equilibrium whereby there are a small number of laying workers, rather than the colony descending into complete anarchy.

cells and while this is easy to recognise, it is not always clear why it has happened. Some cases are clear, for example, big patches of cohesive domed brood or a scattering of odd cells here and there perhaps complemented by obvious multiple eggs in cells. But when they are not clear we need other clues from the colony (assuming it is still alive.) We can tell a lot from the behaviour and cohesion of the other bees; if they show purpose and order in their activities, we are probably looking at a DLQ; if they are disorganised and chaotic, then it is probably a case of LVW. Remember too that clustering in the cold is not a sign of queen presence; this is just a sign of communal heat conservation.

The next action

In the case of DLQ, the best thing to do at this time of year is to remove the failing queen and unite this colony with another. Yes, the combined colony will have an oversupply of drones, but this is not critical and the bees will probably correct this. More importantly the remaining workers within the DLQ colony will help bolster the other colony. If you have an overwintered nucleus then this would be an ideal candidate to unite with.

In the case of LVW uniting would be a bad idea, as it may well induce chaos and queen loss. The best thing to do here is to remove the LVW hive and shake all its bees onto the ground in front of another reasonably strong, healthy colony on a day and time when they are actively foraging. The disorientated and submissive workers will generally be accepted by the guard bees of the queenright colony, but the laying workers will be recognised by scent as 'foreign queens' and barred from entering, most probably killed for trying.

Dan Basterfield, NDB, Devon BKA

Above: A close-up view of brood from a drone-laying queen. Photo by Richard Ball. Right: Domed cells of drone in worker cells. The pattern indicates a drone-laying queen. You will find that this is usually much more apparent if you can tilt the frame (as in photo above). Photo right courtesy of Fera, Crown Copyright.



Furthermore, the laying workers start to smell a bit like proper queens and may even be courted by some of their sisters.

Even setting aside the fertilisation question, laying workers are a poor substitute for a queen. Firstly, they do not appear to check if a cell is occupied before laying in it; secondly, their shorter abdomens mean that eggs are deposited untidily, often on the

Left: Photograph of multiple eggs within cells — a classic sign of laying workers. Photo courtesy of Fera, Crown Copyright.

Below: Close-up photo of multiple eggs within a cell, taken by Richard Ball.



sidewalls of cells; and thirdly they are disorganised in their laying patterns. Thus we end up with scattered brood and multiple, poorly placed eggs in cells. Again, the other workers will recognise and feed the drone larvae, and worker cells will be elongated and domed when capped, but these will be much more scattered than if they were a DLQ.

At this point we could look at photos of drones laid in worker

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Other Honey Bees

As there are no solitary bees around in the winter I thought members might be interested to read about the other three species of honey bee in the world. I suspect that many members assume that *Apis mellifera* is the only honey bee. Some of these other three species have recently been split by experts into yet more species, as well as subspecies, but this need not bother us here. They are all in the same genus, *Apis*, and all produce honey; they all have similar-shaped legs and similar faces with hairy eyes, but they vary considerably in size, colour and habits.



The smallest species is *Apis florea*, commonly called the 'small honey bee'. Its body, or abdomen, is reddish on the front half and black on the rear half, and it has no bands. It makes its small single comb in the open, normally hanging over a branch and it occurs from the Middle East eastwards through India to south-east Asia and Indonesia. The local people hunt the nests for honey, cutting them from the branch.

The largest species is *Apis dorsata*, the 'giant honey bee', which has a long, orange, unbanded body with a black tip and is found from Pakistan eastwards through India and southern China to the Philippines. It also builds its large single comb in the open, usually hanging from a branch high in a tree or on cliffs in the mountains.



Other honey bees: In these photographs all bees are workers. At the top, from left to right are; *Apis florea*, the small honey bee; *Apis cerana*, the Oriental or Asiatic honey bee and *Apis mellifera*, the Common or European honey bee. At the bottom is *Apis dorsata*, the giant honey bee. Photos by Jeremy Early.

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The large nests are hunted for honey, which may be causing the decline of this honey bee.

In the middle is *Apis cerana*, the Asiatic or Oriental honey bee, which is fairly similar to *Apis mellifera* in size, colour and habits; it is slightly smaller and the bands on the body are less well marked. It builds nests with multiple combs in dark sites, such as caves and hollow trees. It has a far larger range than the two previous species, occurring from India into southern Russia and China and as far as Japan in the north, and in the south to Indonesia and the Philippines. It has been domesticated and is kept in hives.

Apis mellifera, the 'common or European honey bee, has a natural range in Europe and Africa but it has, of course, been introduced all over the world.

David Baldock,
Bees, Wasps and Ants Recording Society
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Flower Power

Seasonal changes to the landscapes of Britain are almost imperceptible to the human eye, but we choose to mark differences with a new month and the feeling that the first of February is the start of the long haul into spring. Optimistically, it can be a time when queen bumblebees start emerging from their winter nests and the early flowers which tentatively began to appear in January



are growing stronger and lightening up the dark earth. However, in some parts of the British Isles the second month of the year is traditionally called February Fill-Dyke because it is often the wettest month of the year; time will tell if the change in weather patterns also changes this.

This is also the time when gardeners are keen to get out on bright days to finish the tidying up jobs that inevitably were not done in a previous wet autumn like the one we have just had. For bees, especially bumblebees and some solitary bees, this can be a dangerous time when gardeners may be digging up scrubby and tussocky areas. Heavy winter pruning and too much tidying can damage many insects and their habitats, including overwintering butterflies, useful pollinators and the predators of other insects that we consider undesirable in the garden. A good plan is to gather up dead leaves as they fall and have a special bin in which they can rot down and make leaf mould, but leave the stalks and seed heads of flowering plants as places for insects to hibernate and seeds for birds to feed on until the spring when they can be added to the compost bin. The aim is to ensure that our actions do not compromise the wildlife in our gardens.

The beginning of February does not mean that there will be a sudden abundance of flowers yielding forage for hungry bees. Indeed, as seasoned beekeepers will know, there have in the past been winters that linger on with snow lying on our gardens for weeks, freezing and killing the first flushes of all useful flowering plants. The exception appears to be the snowdrop (*Galanthus spp.*) which, despite appearing to be delicate and fragile, seems able to cope with a covering of heavy snow.

Snowdrops have a long flowering season from late December often until early March. If the weather is warm enough honey bees will work them for shiny, yellowish/brown pollen. It is a plant that attracts a lot of public interest and during its flowering time several private gardens in the British Isles open their snowdrop gardens to the public. Many people visit for the sight of glorious drifts of hundreds of thousands of pure white flowers. Others, known as

galanthophiles, are more interested in seeing rare species and cultivars of which there are many.

For me February is the time when I regret that I did not split my snowdrops to make more plants after they died down last spring and that I did not plant more bulbs in the previous autumn, especially crocuses; it is a great pleasure to see honey bees in these flowers, often several in a single flower as they compete for the glorious yellow and orange pollen. This year I will make a note in the autumn to plant more bulbs.

Both for gardeners and beekeepers this is a frustrating time in the garden and/or apiary. Beekeepers are waiting to be reassured that their colonies have survived, to check that they are queen-right by looking for sealed brood and to assess whether they have enough food to last until there is good forage in the garden by hefting, and feeding them sugar syrup or fondant if not. For the gardener, days that do not entice us out can be put to good use indoors by making plans for enhancing or creating a bee garden with suitable annuals and plants and poring over the new catalogues giving us hope for the year ahead. If you have access to the internet why not log onto the BBKA website shop where you can buy a



Crocus (above, left) and snowdrops (above). Photos by David Wootton.

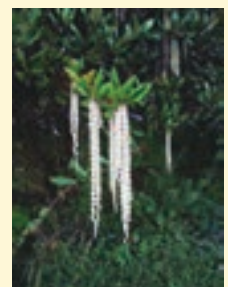
range of goodies including seeds for wildflower mixes, borage, *Echinacea* and plants for a conservation hedge mix and an edible hedge mix; something to look forward to until spring really is here.

Further reading

There is a useful article in the January issue of *The Garden* (RHS) on snowdrops, which readers may enjoy.

Dr Sally Bucknall

Erratum: In January's Flower Power article the photograph labelled as *Garrya* was incorrectly labelled; it was in fact Hazel. The editors apologise to Dr Bucknall and to BBKA News readers for this error. The photo opposite is of *Garrya elliptica* by Sean A O'Hara and is licenced under the Creative Commons Attribution 2.0 Generic by Wikimedia.



Skep Beekeeping: Part 4

Last month we looked at siting and stocking a skep or skep apiary. This month we will look at some more considerations in developing best practice.

Inspecting the bees in a skep

A simple first step would be to observe the skep entrance. Whether you have a channel cut into the floorboard for the bees to alight upon and crawl inwards underneath the skep or a letterbox entrance somewhere further up, a great deal can be learnt watching and listening to the bees come and go, examining the debris upon the alighting board and more. One simple example is, if pollen is being brought home then it is a sign that the colony has brood.



Wicker skep with mouse guard and owl pellet. Photos by Chris Park.

A second step you may like to employ is hefting the skep, keeping it on the stand and board so as not to break the propolis seal. This art will take some time to master; time is needed for the wisdom of one's flesh and sinew to calibrate and assess the weight of the colony. Once mastered, however, the kinesthetic and sensitive tactile qualities that will be fostered within you may bestow all sorts of additional blessings upon your life in this increasingly abstract and mechanised world. I like to put mesh floors into skep stands, and so a third step may be removing and inspecting a tray beneath a mesh floor. Upon this tray there will be a wealth of information about what is happening inside. You will see where the bees are uncapping stores and brood, where they are building new comb, various pollen loads, varroa, and evidence of hygienic behaviour, dysentery and other conditions or diseases. Plus, you will be implementing a natural way of helping the colony resist varroa. A tray beneath a mesh floor can also lure the wax moth to lay eggs there instead of in the colony above. If you do not like the idea of a mesh floor, the skep stand or floor boards can be changed for a clean ones and the debris on the old ones can be examined.

Penultimately, if what you have observed so far is cause for alarm, you may wish to upturn the skep and look for queen cells or evidence of swarming. To check for healthy brood, one can part the combs and if a good amount of healthy sealed brood is present fears may be eased. As Frank Alston wrote, 'a good slab of solidly

sealed brood is a fair indication that all is well'. You will be able to count the number of plates of brood comb, assess honey stores and perhaps spot a queen. The nature and frequency of exposed inspection of skeps is a double-edged sword. On one hand, the less you inspect the better. The bees are less disturbed and the pheromones at the heart of their world remain happy ones, propolis is not broken; the temperature is not lowered; comb is not broken; bees are not squashed or smoked; bees are not stressed nor put at risk of disease entering their dark temple of sound and smell, taste and touch. In the other hand, you will be less aware if disease has entered their world.

Ultimately, in the worst case scenario, if a skep does need to be checked for foul brood, the combs can be cut out and inspected one by one as the cross sticks or 'spleets' are slowly removed. A skep comb cutting knife that is usually used for harvesting is the right tool for the job. It consists of a blade that protrudes at a right angle from the end of a long handle. The combs can be carefully put back again if no signs of disease are present. The bees would not thank you for it, and the inspector probably would not either, but the job can be done. Natural honeycomb can be transferred from one place to another with due care and attention. A few years back, a friend and I removed a colony from a roof that had been

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Wicker skep daubed with a dung and lime mix.

there for a number of weeks. We simply took them out one by one from the closest end, inspected them and fastened them into an empty skep with cross sticks pinned through the skep at right angles to the combs (to brace them against falling out or falling against each other while upturning the skep). The straw skep had a flat top with a three inch feeding/expansion hole in the top, and was fed and built up well.

Apiary hygiene

Good apiary hygiene is of heightened importance in a skep apiary. To limit the spread of disease is paramount. As you most likely know, this can be done by preventing robbing and drifting, keeping the apiary clean and tidy, and keeping equipment clean and disinfected. Mice are a possible source of spreading disease. If a skep is well guarded from mice (a simple mouse guard can be pinned to the entrance) they may still build a nest on top of it in the winter months. It is good practice to check under hackles or skep shelters from time to time through the darker half of the year.

Harvesting

Harvesting honey comes in various forms ... assuming no-one is bent on reviving the practice of sulphuring or drowning the bees. The simplest way is to cut out some of the honeycomb from the outermost edges, sometimes referred to as 'castrating' the comb. Ekes and Nadirs may be used in this method to increase the capacity if it has not sent out a prime swarm, and then harvest or castrate later in the season. Another successful method is to have a 'brood' skep with a three inch circular hole in the top and consecutive 'super' skeps above it. Driving or drumming the bees as mentioned in earlier articles is another method. In all these methods it is easier to spill honey from honeycomb than it is using wired frames; greater care must be taken. A large amount of wax is harvested and ideally a colony ought not dwell on the same brood comb for more than two years without swarming. The bees can be driven into a new skep before midsummer and they will

hopefully have the rest of the season to build up a strong colony. Bees can be driven in the autumn and a new colony can be made up of any unhatched brood comb and some nurse bees. Honeycomb can be consumed or packaged as cut comb, or run through straining bags into containers; the famous 'honey-poke'. The wax can then be washed and you are halfway to making mead.

I am still a learner myself, all the time learning, experimenting with the varying styles and sizes, systems and shelters. There are of course other intricacies and concerns depending on what systems of management a skeppist explores and deploys. It is not just sweetness and light; there is equal venom and shadow and all is of great value. Developing best practice is an ongoing process and at least if one aspires towards impeccability then you can feel twice as good about enjoying the blessings and benevolence of skep beekeeping. There are many advantages for the bees, much more than those I have highlighted and the disadvantages are generally for the beekeeper; perhaps they are blessings in disguise.

For some readers, these four articles have hopefully given you enough tools, references and inspiration to begin a careful procession along the path. For the majority, they will provide an insight into what some of the natural beekeepers up the road from you may be up to and why. For all of you it has hopefully been a window onto a small fragment of the rich history and heritage of honey.

Chris Park,
Wiltshire BKA

Chris Park lives on the Oxfordshire/Wiltshire border and runs monthly skep making and skep beekeeping courses and visits bee clubs demonstrating and lecturing on the heritage of honey. For more information visit www.acorneducation.com



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Why Do We Keep Bees?

Now there is a question to ponder if ever there was one. Why do we keep bees? I know why I keep them (more of that later) but I have often asked other beekeepers why they do and few have ever really thought about it. So, as this is the quiet time for beekeepers, I found myself pondering on this question. I think it is a really important one to try to resolve because, in recent years, there has been a very high turnover of beekeepers (I understand that the correct technical term is 'churn') so clearly a good number of 'transient beekeepers' have also failed to identify good enough reasons for themselves to continue with our craft.

It appears that many who have recently come into our craft have done so in order to save bees from extinction. Or at least that seems to be the gist of their reasoning. Several books have been published which, erroneously, quote Einstein as claiming that mankind would be extinct within three or four years if honey bees were to disappear. Nothing could be further from the truth but nevertheless, that is the credo by which many justify their involvement in the craft. I am sure that saving the world is an honourable thing to do but I am also sure that there are other ways in which, as individuals, we can have greater impact.

Another group of beekeepers seem to have as their prime objective, the ridding of the world of almost any use of chemicals and I have to agree with them that the absence of chemicals in beehives is a highly laudable objective. It is curious though that this group of beekeepers seems to think that the ban on using chemicals should apply to everybody except themselves as many of them routinely use harmful chemicals in their own hives (for example to rid their colonies of varroa). I really do not think you ought to try to have it both ways; you are either against chemicals or you are not. Yet another category of beekeeper seems to have as their mantra 'to be holier than thou' and claim that 'natural beekeeping' is the only possible way of keeping bees. Some I have met even make this claim before they have bees and with absolutely no experience of handling them. As I have mentioned before, many of the practices which are followed are far from natural; to totally ignore the possibility of disease within a colony in order not to 'disturb' the bees is, in my opinion, nothing short of criminal. It is time we dispelled the myth that treating bees with a callous disregard constitutes natural practices.

Strangely, there is a good deal of cross-over between some of these categories with, for example, many of the 'chemically averse' or the 'evangelists' also being so-called 'natural beekeepers'. But the real essence of this issue is, as I see it, just exactly what we as

individuals contribute to the well-being of our bees. I feel that contributions to most things in life, (including beekeeping) can be measured by what you are for and what you add rather than what you are against. So, rather than appear negative myself, I will devote the remainder of this article to the positive aspects, those reasons why we should keep bees and which, themselves make a positive contribution to society.

Few hobbies, interest or obsessions (it is for you to choose what beekeeping means to you) offer so many opportunities to gain knowledge in so many different disciplines: anatomy, biology, chemistry, social sciences, marketing, woodwork, meteorology, geology and botany to name but a few. All are enriching and all introduce you to yet more new avenues. Few hobbies, interest or obsessions offer the chance to carry out real and meaningful research in your own back garden. Few allow you to take really acceptable home produce to your hosts when you go out to dinner. And few allow the chance to cover your costs as you go; when did golf ever pay for the odd night out? For some, beekeeping can offer an invaluable supplement to an otherwise limited income through simple and enjoyable activity.



There is nothing like a happy day in the apiary with like-minded colleagues. Photo by David Wootton.

There are some beekeepers who, quite frankly, find honey and its extraction a chore but they continue to keep bees because it affords them all of the positive opportunities above, though renowned USA beekeeper Kim Flottum is quoted as saying that 'while most beekeepers take up beekeeping for the love of bees, many give up for the dislike of honey processing'.

So, why do I keep bees? Quite frankly because I am addicted to it! I find the opportunity to observe the intricacies of a complex society of creatures totally irresistible. The chance to work in harmony with a wild creature, gently managing both the colony and its environment, observing the warnings which the colony provides if I go too far is constantly rewarding as it is always a learning opportunity. Far from creating a disturbance to the colony as I examine it, I am often entertained to see the queen continuing to lay eggs throughout the examination. I am sure that she would not be doing that if the colony was under stress. Each year, I attempt to learn more about my colonies and will often try to manage them in different ways to assess the impact. For example, experiment has taught me that, with a suitably planned approach to varroa control, use of chemicals is not always necessary.

Beekeeping also transcends boundaries, both social and geographic, and I have yet to visit a country without beekeepers. Beekeeping is not a secret society but it does unlock doors and helps provide access to otherwise unthinkable opportunities. So, be positive, enjoy your craft and continue your learning.

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Simple Plant Propagation: Providing for our Bees' Foraging Needs

I am sure that, occasionally, we are all given to wonder what our bees are foraging on and many of us think how we might assist them by planting flowers, shrubs and trees. When trying to discover what the bees are foraging on do not think just of nectar secretion, look also at the colour of pollen loads using Dorothy Hodge's *Pollen Loads of the Honeybee*; some simple pollen analysis can add to our knowledge of what the bees are working.

Nutrition and pollen

Pollen is much more important to our bees than most beekeepers realise. It is their protein and also provides minerals, vitamins, oils and fats. It is what larvae are principally made of and without pollen the brood food glands cannot function and brood cannot be raised. Sugar syrup we can easily feed as a nectar substitute, but pollen is not so easy to provide at short notice.

A shortage of pollen at any time can set colonies back, particularly in the spring build up. Two years ago there was a good early spring followed by a month of very cold, overcast weather in April, when the bees could not get out to forage. They had plenty of honey but pollen was soon in short supply. Brood raising stopped, existing brood was destroyed and the remnants thrown out. Not a cell of pollen was to be seen. When the thermometer rose above 12°C and the pussy willows, *Salix caprea*, burst forth with their lovely yellow pollen, brood rearing resumed, but there were still consequences. A lot of those colonies went down with excessive chalk brood and some with nosema.

Planting for bees

One remedy seemed to be to plant something that can supply pollen close to the apiary as bees will not forage far in the cold. As a first measure we bought in one thousand crocus corms, a lovely yellow species, *Crocus speciosus ancyriensis*, that will self-seed and multiply. These were planted just by lifting the turf and scattering the corms underneath on the surrounding verges and road junction areas, and they are a delight to behold. This spring will be their second season and we eagerly await the flowers. I hope the bees do too. The few people who see them will think it is 'fairy dust'! In the longer term we need to plant shrubs and trees close by these apiaries to extend the flower availability.

Raising your own

Raising from seed, with all the mixing of genes during fertilization, never guarantees the properties of the parent plant. Growing seed from a Cox's apple will not give you a Cox's tree. Only clonal methods guarantee that the offspring are true to the parent. Cuttings, air and ground layering, root cuttings and grafting are the most common clonal methods.

In this first article I will deal with shrub and tree grafting as a technique, January, February and March being the time for grafting while the plant wood is dormant. I will cover techniques employed for other propagation methods in *BBKA News* during the appropriate season and hope that you will be encouraged to experiment with all of the methods of plant propagation for the benefit of your bees and your pockets.

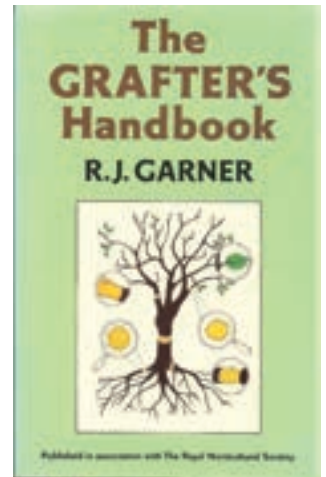
Grafting

Some cuttings will not readily produce roots, so grafting onto a suitable rootstock is one of the simple methods open to us for clonal propagation. It is relatively easy once you know what you are doing as, essentially, it is simple carpentry with living rootstocks and scion sticks.

It was one of those inspirational transformations when I found R.J. Garner's *The Grafter's Handbook* (1993) and took the plunge. [This book has now been revised and is to be published by Mitchell Beazley in February 2013.] Not really knowing where to get rootstocks and the like, I was grafting conifers onto conifers, apples on to apples, pears onto hawthorns. Any scion wood that I could beg from likely looking fruit trees was tried and with a lot of success. We have a number of 'family' trees from those days with a range of complementary varieties grafted on.

I have been grafting fruit and ornamentals for a long time now and probably have grafted more than 4,000 of them to date. Plums were the most difficult to master, but now I get about 99% take on them. Three years ago in anticipation of the move to a new honey farm, I grafted 200 apple trees, 100 pears and 100 plums and last year I grafted a further 600 apples for the orchards. The photograph on the right, shows one of the three-year old plums in flower this year.

Out and about, whenever I see a tree that bees are working well or one with particularly attractive and tasty fruit I will ask for a few short sticks of the wood to graft with. Keep your eyes open for your own specials! Crab apples yield pollen particularly well and is very attractive to bees. They also serve as good pollinators for some of the self-sterile culinary and desert apple cultivars. A lot of ornamental cultivars are also good for bees provided they have not been so selected for flower form that they are no longer fertile, e.g. double flower selections are usually no good for bees. If it seems I concentrate here on fruit trees, it is the double bonus of pollen and nectar for my bees and fruit for me and my family. Non-fruiting cultivars are also good for bees.



The art of grafting

Nature does grafting without our intervention, above ground and below, but if we want to successfully and selectively achieve the same artificially then we need to know 'the how and when'. First some of the terminology used.

Rootstock

The rooted stem onto which you graft your scion. There are standard virus-free rootstocks available from the horticultural trade. Common names are M27, M9, M26, MM106, M25 for apples, St Julian for plums etc. The rootstock controls the overall vigour of the tree; M27 being the most dwarfing, M25 for the biggest trees.

Scion

The 'variety' (aka cultivar) with the characteristics that you want to propagate. Scion approximates to 'son of', e.g., if you wanted an orchard of Cox's Orange Pippin, then you would take sticks of scion wood from a Cox and graft these onto your chosen rootstocks.

Compatibility

Usually grafting is only possible within the plant genus; apple on apple, plum on plum. Pears are a bit more robust and with care can be grafted onto hawthorn or quince. They are all part of the rose family, so they are close cousins.

Cambium

This is the thin green layer between the bark and the wood where all growth takes place and where the sap rises. It is important that the cambium of the rootstock touches the cambium of the scion wood for sap to flow across to heal the union and keep the scion alive.

Grafting

This is uniting scion wood with a rootstock. This is a mechanical process, i.e. living carpentry, which binds the cambiums (cambia) together so the joint can heal and grow.

Grafting wax

A paraffin wax into which the newly made graft can be dipped to protect from rain and pathogens while the union heals. For beekeepers with ready access to it, beeswax is to be preferred.

Grafting knife

A pocket knife, usually straight edged, sharpened one side only. Remember that stainless steel does not keep a sharp edge for long.

Whip and tongue grafting

The simplest technique is the 'whip and tongue' and I will use this to illustrate the tools, materials, techniques and terminology associated with this craft. A healed whip and tongue union is shown above, opposite alongside a line drawing of the methodological process.

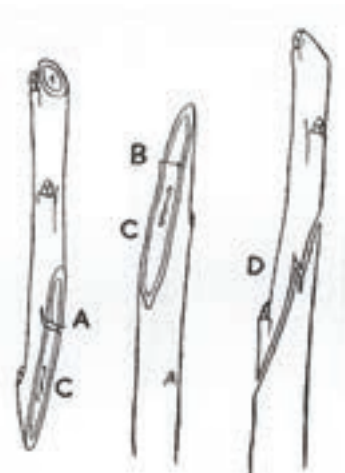
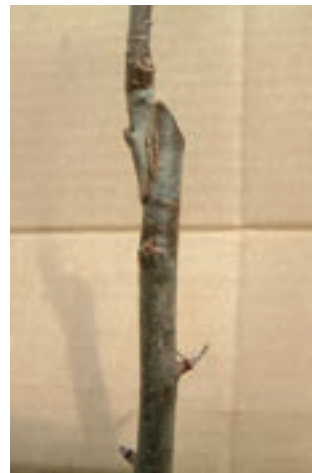
Timing

Usually late January to early March.

Method

The line drawing above opposite shows the scion wood on the left. This has been cut with tongue A, rootstock shown central with corresponding tongue B, and, on the right, the two coupled and fixed mechanically with the interlocking tongues to avoid slippage on assembly. C indicates the cambial layer on both components; this layer is found just under the bark.

The two matching slices are made using the grafting knife; one



Above left: Healed whip and tongue union. Above right: The process of whip and tongue grafting; drawings are taken from The Grafters Handbook courtesy of Robert J Garner and the RHS. All other photos are by Daniel Basterfield. The scion wood drawn left has a tongue cut into it (A); the rootstock, drawn centrally, has a corresponding tongue cut into it (B). Each wood has a cambial layer (C) the area and shape of which should match as closely as possible. The woods are joined by interlocking their tongues and then fastened together securely using an elastic band. The scion is pruned to three buds and the graft joint is sealed using molten wax before the grafted rootstock is planted out.

on the rootstock and the other on the scion wood. The long sloping cuts are made to extend the area of cambial contact to facilitate a good union. The wood diameters for each part will have been selected to get a good match of the two cambial layers. The joint is bound with an elastic band to hold it together. After cutting off the scion to leave three buds, the joint is sealed in molten wax and a label attached. All that remains is for the grafted rootstock to be planted in a sheltered spot in the garden, as shown below.



The grafts will heal and it should grow to three feet within the year. Care is needed while the union is still young as it is fragile and can easily be broken. Tie the growth to canes in July to ensure a straight stem. Keep them weed free and plant out in their permanent position the following winter. The label should record date, rootstock name and scion variety. If you do not know the scion name then put a reminder on the label of where you obtained the scion material, so that it is traceable and repeatable if you wish to do more later. It is a terrible thing to find out in a year's time that you have forgotten what it is or where it came from! Good luck, enjoy yourselves.

Ken Basterfield, NDB

If any of you are interested, I could run a workshop on grafting techniques. Contact me on ken@basterfield.com

In the News: Secrets of the Honey Bee Bite Revealed

A previously unknown honey bee defence weapon against varroa and a potential new natural anaesthetic for humans

Researchers have discovered that honey bees can bite as well as sting and that the bite contains a natural local anaesthetic. The local anaesthetic may not only help honey bees fend off pests such as wax moth and the parasitic varroa mite, but it also has great potential for use in human medicine.

The surprise findings discovered by a team of researchers from Greek and French organisations in collaboration with Vita (Europe) Ltd, the UK-based honey bee health specialist, will cause a complete re-thinking of honey bee defence mechanisms and could lead to the production of a natural, low toxicity, local anaesthetic for humans and animals.



Honey bee showing mandibles. Photo courtesy of Vita Gallery, Vita (Europe) Ltd

The natural local anaesthetic that has been discovered in the bite of the honey bee and measured at the University of Athens is 2-heptanone, a natural compound found in many foods and secreted by certain insects, but never before understood to have local anaesthetic properties. Independent tests have verified Vita's findings and the potential of 2-heptanone as a local anaesthetic.

As a naturally occurring substance with a lower toxicity than conventional local anaesthetics, 2-heptanone shows great potential. Vita has already patented the use of the compound as a local anaesthetic and is seeking pharmaceutical partners to develop it further.

Until recently, research seemed to indicate that 2-heptanone was either a honey bee alarm pheromone that triggers defensive responses, or a chemical marker signalling to other foraging bees that a flower had already been visited. Vita's results contradicted these notions. The new research clearly shows that 2-heptanone paralyses small insects and mites bitten by bees for up to nine minutes. Somewhat like a snake, the honey bee uses its mandibles to bite its enemy and then secretes 2-heptanone into the wound to anaesthetise it. This enables the honey bee to eject the enemy from the hive and is a particularly effective defence against pests,

such as wax moth larvae and varroa mites, which are too small to sting.

Dr Max Watkins, Technical Director of Vita (Europe) Ltd, said 'We are very excited about our findings on at least two levels. Firstly, the revelation that honey bees can bite enemies that they cannot sting confounds some existing ideas and adds significantly to our biological knowledge. Secondly, the discovery of a highly effective natural anaesthetic with huge potential will be of great interest to the pharmaceutical industry eager to develop better local anaesthetics.'

In laboratory neurophysiological trials in the School of Biology of Aristotle University of Thessaloniki in Greece, 2-heptanone was found to have a similar mode of action to Lidocaine, the local anaesthetic commonly used in humans and other mammals. 2-heptanone is found naturally in many foods such as beer and white bread and is permitted as a food additive by USA regulatory authorities. 2-heptanone offers considerable potential as an alternative to Lidocaine. Very recent laboratory research using mammalian cells in the USA, has confirmed Vita's expectations that the anaesthetic could be as effective on humans and mammals as it is on insects and mites.

In considering the biological impacts of the findings, Dr Alexandros Papachristoforou, a Vita researcher working under the supervision of Professor G Theophilidis in the Aristotle University of Thessaloniki said: 'It is amazing that this second line of honey bee defence has gone undetected for so long. Beekeepers will be very surprised by our discovery and it is likely to cause a radical rethink of some long held beliefs. It will probably stimulate honey bee research in many new directions. For instance, many beekeepers have spoken of the 'grooming' behaviour of honey bees in helping to control varroa populations. This grooming behaviour can now be interpreted as biting behaviour'. Dr Papachristoforou described how the unexpected properties of 2-heptanone were discovered: 'We were investigating wax moth control. Wax moths are a serious honey bee pest, whose larvae consume wax and pollen, often completely destroying honeycomb. When exposed to 2-heptanone, which is produced naturally by honey bees, the wax moths appeared to die. However, on closer inspection, we realised that the wax moths were merely anaesthetised for a period of one to nine minutes. This was quite unexpected, so our scientific team set up a series of rigorous experiments to find out what was really happening and came up with our remarkable discovery.'

The research has just been published in the peer-reviewed journal, *PLOS ONE*. The detailed scientific paper can be read at <http://dx.plos.org/10.1371/journal.pone.0047432>.

Several organisations contributed to the research in collaboration with Vita (Europe) Ltd. This includes the Aristotle University of Thessaloniki in Greece, the French Centre National de la Recherche Scientifique (CNRS), Université Paris-Sud, Cyprus University of Technology, and the University of Athens.

Vita-Europe.com

Swarms and Beekeepers: Are You Involved?

One important part of the BBKA website is the Swarm List facility and this article is written to explain why it is important and why we would like the maximum number of beekeepers names on the list. At this point I must emphasise that the Swarm List facility is intended to provide a source of information which can be accessed by anyone who has internet access. It is intended to supplement the available information and NOT replace any local arrangements. However, this facility has become well known to many organisations and agencies and is widely used by them when 'swarm' problems are reported.

The Swarm List is based on a post code location system. It provides the person with a swarm, with the contact details of beekeepers whose names are on the list and who are within a ten mile post code radius of their location. The Co-ordinators were introduced to act as final contact should all else fail and their distance from the swarm is fifteen miles. Within the BBKA, we have geographic boundaries that work well for people but swarms of bees do not recognise those boundaries and that is why the radial distance option is used i.e. the nearest beekeeper is identified.

The new BBKA website, launched in May 2011, carried forward the excellent work of Steve Turner who created the first BBKA website, taking BBKA technologically into the 21st century. The original website contained a swarm collectors list to which many beekeepers subscribed. This is what we have built upon and given

more emphasis on the website. For any system of this nature to be effective, there needs to be good national coverage of beekeepers. On the Swarm List in 2012 there were: 1,487 beekeepers out of 22,000+ BBKA members; 64 out of 66 area associations represented and 150 out of 200+ branches/divisions represented. Analysis of the figures shows that some parts of the country had no coverage, while other areas were well represented. The 1,487 registered swarm collectors were not evenly spread; some large areas had just one person, which is not helpful if they cannot be contacted and it places enormous pressure on a limited number of beekeepers within an area.

To try to ensure maximum coverage all associations, branches/divisions were contacted and asked to submit the details of members willing to have their names included on the Swarm List. Some responses were excellent, other associations chose not to respond. While much has been reported in BBKA News during the year, many members have asked me why they are not included on the Swarm List and how they can become included. I have had to refer them to their own associations, as they decided who to include on the Swarm List. This implies that the information has still not been disseminated to all members so in early 2013, this contact will be repeated with a request for names of beekeepers to be included on the list. If you are willing to be on the Swarm List, inform your association secretary that you want to be involved.

A question often asked is: 'Why should I be involved?' The answer is simple and four-fold. Dealing with swarms or swarm-related problems provides a service appreciated by the public. Swarm collection benefits beekeepers as they can increase their stocks. Moreover, swarm collection can provide stocks for new beekeepers. The majority of swarms are caused by beekeepers so we should respond, who ever caused it. We should all try to help spread the workload.

It is recognised that only a small percentage of calls refer to honey bees; not every call is a swarm of honey bees, but when a member of the public has a perceived problem with what they believe are bees they need some advice and reassurance, which beekeepers are usually able to provide. Many members of the public are unable to discriminate between honey bees, bumblebees, wasps etc. The website swarm information contains photos to enable better identification together with appropriate advice in an attempt to minimise calls, but as a last resort people have to make contact when they need help.

The lack of country-wide coverage for the Swarm List can have a severe effect on the operation of the BBKA office. On many occasions during the swarming season, BBKA office staff have to stop their normal work and spend considerable time answering telephone calls from all over the country, sometimes dealing with over one hundred calls per day. Many of these could be better and more speedily addressed at a local level, saving the BBKA time and your money. I am very willing to discuss the Swarm List facility with any member either at local meetings or via telephone. We need good beekeeper contact coverage across the country; I would ask all members (where possible) to be involved in the Swarm List and to make your willingness known to your association secretary.

David Teasdale, BKA Trustee

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Bees Throughout The Ages

Beekeeping activity in Ancient Egypt

The world's oldest pictures of beekeepers at work are from the Old Kingdom of Ancient Egypt (circa 2422 BC). In Niuserre's temple beekeepers are depicted removing honey comb from hives as they blow smoke towards them. The hive designs were very different from the modern hives in use today. The basic design was a skep — an upturned basket. The problem with these was that the hive, and therefore the colony, had to be destroyed in order to extract the honey. So the system was only sustainable if the colony swarmed and then this was actually caught.

Protective clothing does not appear to be worn in the ancient images of apiarists. They seemed to rely solely on the smoke blown into hives to keep their bees calm. It was known that strong smells could affect the bees as early as around 200 BC; the head of the library in Alexandria claimed that beekeepers had shaven heads when approaching hives due to their violent reaction to perfumed oil applied to hair!

Symbolic role of bees

Lower Egypt was the main beekeeping centre as it had an abundance of flowering plants thriving on the irrigated land so it is no surprise that the bee was chosen as a symbol for the country. To this day it remains a mystery as to why the ancient Egyptian bee was represented with four legs, rather than three pairs, as it is shown in many hieroglyphs. However, the importance of honey is clear even from the first dynasty in Egyptian history, where there is even official mention of the title of 'Sealer of the Honey' being given. Honey was clearly valued not only from domesticated bees, but perhaps even more from wild colonies as there is evidence that royal archers protected honey hunters who would search for wild bee colonies.

In Tutankhamun's tomb pots of sealed honey were found and, incredibly, they were still edible after 3,000 years. Furthermore, the discovery of three hundred golden bees in the tomb of Childeric in 1653 emphasises the importance of the humble bee in ancient Egypt. So impressed was Napoleon with Childeric's bees that they subsequently became the heraldic symbol of the French Empire.

Drawings of golden bees found in the tomb of Childeric I. Drawn by JJ Chifflet in 1655; image supplied by Wikipedia.



Harvesting

We know little about how honey was harvested in this period. However, there are some pictures from the tomb of Rekhmire (18th dynasty) which show how the hive was accessed from the back (as it is today!). It appears that one beekeeper blew smoke into the hive from behind causing the bees to escape from the front entrance. It is thought that a second person then broke the mud seal on the hive and removed the combs. The extracted combs were then placed in cow's skin within which they were crushed and the honey was let out through a small hole in the skin into containers.

Uses of honey and wax

Honey was used as a sweetener at a time when sugar was unknown. It was very expensive so was enjoyed mainly by the affluent members of society. In addition, it was given as an offering to the gods. For example, Thutmose III offered four vessels of

honey to Amen. In food, honey was used in bread and in cakes, and it was added to wine. It was also used in medicines and, even at that time, the wound healing properties of honey were harnessed.

Wax was used widely in Egyptian life including its use for sealing things, as a binding agent for paints, in boat and ship building, as well as to harden wigs to strengthen plaits! It was also used in the mummification process with small body orifices being plugged with wax. To this day we do not understand how the Egyptians produced the wax itself. It is thought that after the honey had been extracted the broken down combs were placed in water which was brought to the boil from which the wax was extracted.

Next time, we will look take a journey through Greek and Roman history discovering the Greek patron god of beekeeping, Aristaeus and learning about the Roman view of beekeeping from writers such as Vergil.

Dr Ahmir Ahmad

ahmir@drbeekeeper.com

Improving Honey Bee Health: Proposed Changes to Managing and Controlling pests and Diseases

In 2009, Defra commissioned the National Bee Unit (NBU) to undertake a survey of honey bee pests and diseases with the aim of using the results to inform a review of current policies on managing these risks. The NBU carried out the Random Apiary Survey from 2009 to 2011 by visiting and taking samples from around 5,000 apiaries selected at random from BeeBase, the database of beekeepers in England and Wales. As the results started to become available in the second half of 2011 Defra initiated a review of its pest and disease control policy.

The review considered how best to manage pests and diseases in the future so that the optimum policies and interventions are in place; priorities for future collective action (partnership working) by government and beekeepers are clear; and we are making the best use of current public funding/resources for this programme in order to sustain a healthy honey bee population for pollination. The review was undertaken by Fera (the Food and Environment Research Agency), on behalf of Defra and the Welsh Government, with the NBU, representatives from commercial and amateur beekeeper associations and an independent scientist over twelve months from July 2011. The consultation opened on 10 January and will close on 9 March 2013, and seeks your views on the proposals which emerged from the review. To respond please visit the Defra website <https://www.defra.gov.uk/consult/2013/01/10/bee-health-1301/>

Marie Holmes, Healthy Bees Communications, Defra

What is Adopt a Beehive and How Does It Work?

History

The 'Give Bees a Chance' march to Parliament, led by Tim Lovett in 2008 and supported through PR by Christine Gray, garnered huge media interest and fired the public's imagination; honey bees are in trouble, what can we do to help? Between 2008 and 2010 about 10,000 people took up beekeeping for the first time, an unprecedented surge of interest, making local courses full to bursting with new members. As a new beekeeper, freshly trained in Northampton by such luminaries as Margaret Holland and Claire Waring, I approached the then BBKA President, Martin Smith, with an idea. This arose because I wondered why the BBKA did not have a scheme for people who cannot take up beekeeping, but who want to help the honey bee? Also, I reasoned, if people want to get involved and do something positive, how can we harness that enthusiasm? I offered my time to help set up the scheme, secure sponsorship and get it going on a commercial basis, using the resources of my PR agency, The Twelve Consultancy, on a *pro bono* basis.

Rationale of the scheme

Working with Brian Ripley, the then BBKA Chairman, we developed the details of the scheme. It was set up to place as little strain on BBKA personnel as possible and to meet the two objectives of the BBKA, namely educate the public in the importance of honey bees to the environment, and to promote and further the craft of beekeeping. This is why it includes a newsletter and only works with experienced, trained beekeepers known to the BBKA. Other criteria which underpinned the scheme were that it should always offer a jar of honey, being the unique product of the honey bee; that the honey should be pure British honey, and that any other products included must have a practical application.

Saga sponsorship and 6,000 supporters

With the scheme set up, six months of discussions with potential sponsors followed, and just after Christmas 2009, Saga agreed to sponsor Adopt a Beehive and help promote the scheme with a launch date of April 2010. They gave a cash payment to cover costs, and also gave guaranteed coverage in *Saga Magazine* which is the biggest circulation publication in the UK read by 1.4 million people every month. A single page of advertising in *Saga Magazine* costs £11,250 so the four pages promoting Adopt a Beehive were worth a huge amount, and proved their worth by attracting 6,000 supporters or 'Adopters' in the first year.

How does Adopt a Beehive work?

People can 'Adopt' a beekeeper and their hives from one of ten regions in the UK. It is an entirely virtual scheme, like adopting an elephant or dolphin. No one actually gets to own anything or take it home; they just support it and get to know about it over the course of the year. Initially the scheme only offered beekeepers in England for the public to adopt. However, there was demand from Scotland, Wales and Northern Ireland as more people asked for beekeepers in their local region. Gradually the scheme was extended to include more regions and more beekeepers.

Volunteer beekeepers

All the beekeepers give their time and information for free to support the scheme. Three times a year they are contacted to describe their beekeeping activities and send across new photos.

These are sent either by post or email to their current supporters. You can see all the beekeepers on the BBKA web site on the shop pages, www.adoptabeehive.co.uk.

People cannot visit their beekeepers, although many want to. This has led to some interesting moments. For example, a family turned up in Fenwicks Store in Newcastle asking to see 'their hives'. These are managed by Ian Wallace, one of our Adopt beekeepers in the north east, who keeps them on the roof of the store (access was denied, not surprisingly).

Award winning newsletter

Three times a year, in spring, summer and late autumn, all current Adopters are sent a newsletter, called *Hive Talk*, in addition to an update from their beekeeper. The newsletter contains general news about beekeeping, information about how the money they have helped to raise has been spent and what else they can do, such as gardening or planting tips, to help the honey bee and other pollinators. It was awarded 'Best External Publication' in the Chartered Institute for Public Relations Awards in 2011.

What do you get and what does it cost to Adopt a Beehive?

We charge £30 plus £3.50 postage for a one year's subscription to Adopt a Beehive and each person is sent the following items in a special 'welcome pack' (shown below).

- A choice of 125g jar of honey or honey mustard
- Letter from the BBKA President
- Introduction letter to their Beekeeper
- *Hive Talk* newsletter
- *Pocket Guide to the Honey Bee*
- Packet of wildflower seeds, supplied by Habitat Aid
- Pack of five notelets, each with a picture of a honey bee on a flower
- Adopt a Beehive pencil
- Adopt a Beehive key ring
- Adopt a Beehive window sticker
- A Burt's Bees lip balm, provided free by Burt's Bees



- A voucher for 20% off all Burt's Bees products bought online.

Adopt members are also given the option of not receiving their honey or mustard and 10% of supporters take up this option, choosing to donate the cost instead to the BBKA.

How much does it cost to run?

After the first year of running the scheme, recession gripped the UK. Saga decided not to continue with its sponsorship and a new sponsor had to be found. Burt's Bees, with its strong ethical heritage, became the new sponsor and is signed up until June 2014. Apart from the honey, their financial support pays for all the pack contents and the cost of the agency, The Twelve Consultancy, which has been paid since a sponsor was found, to run the marketing and promotional side of the scheme, as well as liaise with the sponsor and the beekeepers. That leaves the main cost to the BBKA, in addition to general BBKA staff office time, of the printing, production and postage of the newsletter and beekeeper updates. While aiming to switch to e-mail when possible, most people still prefer a paper copy and with postage at 50p a letter, plus the charge for printing and fulfillment this is a big cost.

After costs, all the profits from an Adopt subscription go to fundraising, so around 40% of the price of the pack is profit, which is given to applied research or education projects. Since it was set up Adopt has generated £126,800 surplus since its launch to 30 September 2012 which has enabled the BBKA to provide seed funding to the following projects:

- University of Sussex; supporting the work of the hygienic bees project.
- University of Keele; measuring pesticide levels in beeswax in honey bee colonies.
- University of Keele; improving honey bee health by enhancing the palatability of food supplements.
- Ron Hoskins; increasing the gene pool of honey bees showing hygienic behaviour to *Varroa destructor*.

Where does the honey come from?

Chainbridge Honey in Berwick upon Tweed supply the honey and honey mustard because it proved too complicated and costly to give each person a jar of honey from their adopted beehive, but it was considered vital to supply pure British honey of a consistently high quality and known provenance. If anyone can devise and manage a practical scheme which works around a voucher system where Adopt customers can exchange their voucher for honey from a local BBKA member to save the cost of honey purchase and postage within Adopt, we would be delighted to hear from you.

How is the scheme managed by the BBKA?

The logistics and rapid growth of the scheme have required many changes to the way it operates, including selling through the BBKA web site shop. Fulfillment from the webshop is outsourced, but most Adopt functions are now conducted in-house to keep costs down. People can buy an Adopt package directly online through the BBKA web site, or phone their order through to the BBKA office by calling a special low-call number: 0845 680 7038. BBKA staff in the National Beekeeping Centre (NBC) in Stoneleigh now handle many aspects of the process including taking payment, handling telephone orders, processing renewals, ordering stock and dealing with customer queries.

Customer data

At the heart of Adopt a Beehive there is now a large database of all the people who have bought an Adoption at any time since April

2010. People are invited to renew when their last issue of *Hive Talk* is sent out; some people renew several times or buy several Adoptions for other people as gifts. Sales peak at renewal time, and also in the run-up to Christmas. The database has recently been updated and requires very specialist skills to manage and maintain. If any BBKA member is a data or CRM expert and could offer your skills to help we would love to hear from you.

Commercial activities

Adopt a Beehive has helped the BBKA to develop, at a reasonably gentle pace, a commercial side to the charity. Charities such as the RSPB have a huge commercial division, and other charities in the insect field such as the Bumblebee Conservation Trust have enormous, highly successful fund-raising arms and marketing programmes. Writing and production of *Hive Talk* is outsourced to the agency, which also manages marketing activities, such as the BBKA's Honey Survey to help promote the scheme to the public, and the securing of ongoing sponsorship and additional funds. It is now paid to work for 21 days on the scheme across the year, having initially helped to set up the scheme for free, a cost which is more than covered by the sponsorship which it helps the BBKA to secure.

How can you help?

It is a huge undertaking to maintain Adopt a Beehive, but so long as the number of new supporters can be maintained at above 1,000 a year it is a worthwhile project in terms of raising funds for honey bee research and education. Without the support of a major publication such as *Saga Magazine* it is very hard to reach out to the public working on what is, in the commercial world, a shoe string budget.

The scheme cannot survive without the support of the BBKA membership. We rely on you to tell members of the public about the scheme at local shows and events, help to give out promotional leaflets and help promote the *Pocket Guide to the Honey Bee* to the public for a £1 donation so that they can read more about honey bees, beekeeping and Adopt a Beehive.

Pocket Guide to the Honey Bee

This little handbook is hugely popular with the public, although beekeepers have spotted some inaccuracies which will be ironed out in future re-prints. It was paid for by a generous donation from Rowse Honey, and includes a form to buy an Adoption, and a page explaining what the scheme is about. The *Pocket Guide* is also a fundraising tool when used in conjunction with the Mini WBC Collection Box. BBKA has enough of these mini hives for each branch, so if you do not have one then please contact NBC and we will despatch one to you.

Any help you can give in handing out leaflets, buying an Adopt package for friends or family, or selling Pocket Guides will make a difference. If you would like copies of the leaflet, which has a purchase form on the back, or the *Pocket Guide to the Honey Bee*, please call the NBC on 02476 696679 or email: bbka@bbka.org.uk

The future of Adopt a Beehive

We do need more support to help sell more 'Adopts' and hence help the scheme raise more funds. The best help you could possibly give would be to promote the scheme in your local area. If you would like to know more about Adopt a Beehive or help in any practical way, please email Julie Marples, Administration Manager at NBC, E-mail: julie.marples@bbka.org.uk

Nicky Smith, The Twelve Consultancy

Signing up to BeeBase



The BeeBase online database

The National Bee Unit (NBU) delivers the Bee Health Programmes on behalf of the Welsh Government and the Department for Environment Food and Rural Affairs in England and Wales. We also provide support for the inspection programme in Scotland. In 2012 alone our Appointed Bee Inspectors (ABIs) examined a total of 35,671 honey bee colonies in 6,631 apiaries (belonging to 5,107 beekeepers). Clearly an inspection programme of this magnitude generates an enormous amount of data every year. In order to compile this information so that we can monitor annual incidence and year-on-year-trends in honey bee pests and diseases (especially the foul broods) the NBU uses a very sophisticated online database called BeeBase. BeeBase allows us to prioritise inspections and plan programme delivery. BeeBase also represents a powerful research tool for modelling and epidemiological studies.



Distribution of European Foulbrood Inspections in England, Scotland and Wales 2012. This map is available from the public pages of BeeBase and all images are provided courtesy of The Food and Environment Research Agency (Fera), Crown Copyright; images supplied by the National Bee Unit at Fera.

The BeeBase database was especially constructed in the early 1990s to help us manage the varroa outbreak of 1992 by holding data on all the inspections made by staff of the NBU as well as laboratory samples submitted by beekeepers. It has evolved and expanded ever since. BeeBase includes custom-designed mapping,

Geographical Information Systems (GIS) and spatial analysis capabilities. BeeBase contains all the apicultural information relating to the statutory bee health programme in England and Wales. In 2005, IT specialists at the Food and Environment Research Agency (Fera) launched the BeeBase online website. This was unique, as for the first time it could allow registered Welsh and English beekeepers to access specific information about their own apiaries and their colonies' diagnostic histories over the web. Recently (since 2009), data from Scotland has also been added to BeeBase and since June 2010 registered Scottish beekeepers have also been able to access their records.

Why it is important to register on BeeBase

The programme of inspection followed by the ABI team is risk-based. All registered apiaries have an attributed risk category. This means that those apiaries identified as being at risk of infection by a notifiable disease (European foul brood or American foul brood) or infestation by exotic pests (e.g., small hive beetle or *Tropilaelaps* mites) will be visited as a priority. This, for example, would include apiaries located in an area where a statutory disease has been confirmed as present. Where necessary, during a visit, samples will be collected from affected colonies and submitted for laboratory

diagnosis. However, beekeepers do not need to fall into an at risk area to receive an inspection. Should any beekeeper have concerns about the health of his/her bees then they can contact their local inspector or the NBU team at Sand Hutton in York to arrange a visit (contact details are provided at the end of this article). It is really important that inspectors are able to visit every apiary within an area of confirmed disease, so it is vital to have beekeepers' apiaries logged onto BeeBase to make sure that no potentially infected and/or at risk colonies are being missed.

Those registered beekeepers who have provided us with an email address as a point of contact will also receive our 'Disease Alert' electronically. This automated message is sent each time a new case of foul brood is found, to all registered beekeepers who have apiaries within 3km of the outbreak. The e-mail asks you to be vigilant and examine your colonies carefully. Each email supplies a link (<https://secure.fera.defra.gov.uk/beebase/downloadDocument.cfm?id=7>) to the latest copy of our foul brood leaflet for reference, along with contact details for the field and office staff should there be any concerns. Many beekeepers find this service very valuable.

Registration on BeeBase

The total number of beekeepers registered on BeeBase, at approaching twenty-nine thousand, is the highest it has ever been. In the last two years alone there have been over nine thousand new registrations. This is a wonderful achievement and marks a

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significant improvement in bee health security; the more beekeepers that are registered, the more rigorous our bee health surveillance can be and, crucially, the better our chances of intercepting and eliminating exotic pest threats like the small hive beetle. Thank you to long-time registered beekeepers and welcome to all recent members. We need to keep up this momentum as it is believed that up to 50% of beekeepers may still not be on the database. If you are not yet registered please visit the public pages of BeeBase where you can sign up. Otherwise get in touch with the NBU office team who will be happy to help (contact details at the end of article). By telling us who you are you will be playing a very important part in helping to maintain and sustain honey bees for the future.

How do I know that my details will be secure?

All of the information that you provide for the purposes of registration on BeeBase is covered by the Public Service Guarantee on Data Handling. In addition, all data will be handled according to rules stated in the Data Protection Act, 1998. All levels of access to BeeBase are protected in the same way as online banking. Your personal access is password protected. When you first register you are allocated a temporary password, which is valid for your first visit only. You will then be prompted to set your own password. You need to ensure that your own password remains confidential. You will also be allocated a personal ID Number, which relates solely to you. As a personally registered beekeeper, once



Honey bee visiting a meadow flower. This image is available from the public pages of the BeeBase website.

you have received an inspection visit, you can check your own record on BeeBase. If you wish, you can make use of the apiary records system if you want to record your apiary visits. Your Seasonal Bee Inspector, Regional Bee Inspector, National Bee Inspector and NBU staff at Fera in York will have access to your records, but no inspector or the NBU

How to sign up to BeeBase

Online at: www.nationalbeeunit.com

Email: nbu@fera.gsi.gov.uk

Phone: 01904 462510

The public pages of the BeeBase website

In addition to these secure pages of the BeeBase website, that can only be visited by registered users, the public pages of BeeBase provide a wealth of additional information on the activities of the NBU. BeeBase also contains details about available training and information for beekeepers, guidelines for importing and exporting bees, and the relevant legislation surrounding this and other aspects of apiculture in the UK. It introduces the Wildlife Incident Investigation Scheme (WIIS), that monitors the effects of pesticides

on wildlife and beneficial insects, including honey bees, and explains what to do if you suspect that your bees have been poisoned, and



The American foul brood ropiness test. This image is available from the public pages of the BeeBase website.

how to submit a sample to the scheme (see *BBKA News*, 209: 24–26, January 2013 for further information about the WIIS). BeeBase holds details of all the NBUs current research and development projects, studentships, and international collaborative research initiatives. Other useful resources include up-to-date information about honey bee pests and diseases, their recognition and control, interactive maps, relevant publications, advisory leaflets and plenty of helpful contacts. BeeBase's image gallery is populated

with a range of colour photographs of healthy and diseased bees. It is intended that these will be useful identification aids, and they can be downloaded and used free of charge.

How to provide feedback

We are constantly updating BeeBase and we welcome your feedback to help us make improvements. Please let us know what you think. You will find a link 'Send us some feedback' on BeeBase's home page, or email nbuoffice@fera.gsi.gov.uk

Gay Marris, Mike Brown and Jenna Cook,
National Bee Unit



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The Environmental Audit Committee Inquiry into Insects and Insecticides:

A Review of the Written Evidence

Introduction

On 18 September 2012, Defra published an analysis of the results of its review of recent research on the effects of neonicotinoid insecticides on bees. It concluded that it is appropriate to update the process for assessing the risks of pesticides to bees, that further research will be carried out to fill identified evidence gaps and that recent studies do not justify changing existing regulation.¹

On 25 September, the House of Commons Environmental Audit Committee (EAC) announced an inquiry into the impact of insecticides on bees and other insects, in particular the effect of systemic neonicotinoid pesticides on pollinators. The committee will examine the basis on which Defra decided not to take action at this stage and whether such a course is justified by the available evidence.² The committee intends to examine:

- ❑ The use (or abuse) of evidence in this particular case, for setting policy and regulations on pesticides.
- ❑ The application of real-world i.e. 'field' data. What monitoring there is of actual, rather than recommended, levels of pesticide usage, and the extent to which that influences policy on pesticides.
- ❑ Any potential impacts of systemic neonicotinoid insecticides on human health.
- ❑ What alternative pest control measures should be used, such as natural predators and plant breeding for insect resistance, in a bid to make UK farming more insect and bee friendly.

The purpose of this article is to provide an overview of the issues raised in the written evidence. By including reference to human health and other pollinators, the scope of the inquiry is wider than just honey bees and this is reflected in the evidence received and the individuals and organisations that submitted evidence.

At the time of writing (late December 2012), the EAC inquiry is still in progress, in that not all the oral evidence has been taken. All the evidence so far received is available on the EAC website, including the written evidence in pdf format. If you are interested in this issue, the evidence is well worth reading. It is assumed that beekeepers are familiar with the mode of action of systemic seed treatments and the fact that neonicotinoids are highly toxic to honey bees.

Written evidence

There were thirty-three written evidence submissions, including that from individuals, scientists, conservation organisations, beekeeping associations, agro-chemical companies and regulatory bodies. There appeared to be four key issues worth reporting:

- ❑ Concerns about the risks to bees from neonicotinoids.

- ❑ Further research on neonicotinoids.
- ❑ The pesticide approval process.
- ❑ If a suspension of neonicotinoids is called for.

By way of an overall view of the evidence submitted, the above issues were compared with the written evidence. It will come as no surprise that conservation organisations such as Buglife, The Wildlife Trusts, Friends of the Earth, The Soil Association, beekeeping associations and concerned individuals took an anti-neonicotinoid position, although not all called for an immediate suspension.

The agro-chemical companies and associated organisation, e.g. Bayer CropScience Ltd, Syngenta and the Crop Protection Association, took the opposite view, i.e. neonicotinoids are not responsible for honey bee losses as they fulfil current safety requirements and there would be consequences if their use were suspended.

Concerns about the risks to bees from neonicotinoids

The sources of exposure to sub-lethal pesticide residues in plant pollen, nectar and guttation drops was cited as a concern, as was airborne dust released during the seed drilling process (no matter how carefully this was carried out). The ability of systemic pesticides to leach and persist in soil and water was also identified as a source, especially when they are taken up by non-target vegetation, e.g. field margin hedgerows. This might accumulate if there were successive annual plantings. It was stated that only about 2% of seed treatments are taken up into the plant and that the fate of the remaining 98% in the environment is largely unknown. Another possible route might be via grazing pastures containing clovers on which contaminated manure from silage grown from treated seed was spread.

Citing recent studies and research, the effects of pesticide residues include their impact on the bee immune system, with the potential for making bees more susceptible to nosema, and known effects on bee behaviour, e.g. foraging and navigation. A correlation between the use of systemic insecticides and observed changes to honey bee behaviour, not attributable to varroa was hypothesised, including fatally late swarming, virgin queens not returning to the colony after mating flights, failure of mated queens to sustain laying fertilised eggs, or laying unfertilised eggs, and abnormal supersedure.

The unknown effects of combinations of pesticides was noted, i.e. the 'cocktail' effect. Concern was expressed that seed treatments are used prophylactically, i.e. as insurance, so combining sub-lethal doses with time, to produce the risk of chronic exposure. Finally, the unknown effects of pesticide residues brought back to the colony on larval and pupae development was also raised.

Further research on neonicotinoids

The research proposals mostly reflected the concerns noted above. It is important to establish the actual exposure of all pollinators to neonicotinoids or combinations of pesticides in their natural environment. There is a need to establish the fate of the 98% of seed treatment not taken up by the plant and currently unaccounted for. Also, research is needed into the cocktail effects of pesticides that could be used together. It was noted that wild pollinators carry out 90% of pollination, yet most research is focused on honey bees. While there is a reporting scheme for crop spraying, there is no scheme for reporting the location of crops grown from treated seed. Scientists agree that this would be a sound basis for establishing actual field exposure and to determine correlations with colony survival.

The pesticide approval process

The regulatory system was the subject of criticism. In particular, the shortcomings of the current risk assessment methodology, the lack of adequate chronic and sub-lethal tests, the absence of monitoring of soil and water, the exclusion of wild pollinators from the testing regime and no consideration of 'cocktail' effects. In addition, it was noted that there were no test for acute toxicity (LD50) at colony level. The absence of effective controls on neonicotinoid use for amenity and home use was highlighted.

Lack of transparency in the pesticide approval process was a common complaint and the agro-chemical industry was seen to have an undue influence in this process. The regulatory authorities overly rely on industry studies, which are not available to independent scientists for reasons of 'commercial confidentiality'. So while independent research is subject to open criticism, the same could not be said for industry studies. Indeed it was stated that there is a risk that industry might cherry pick from their studies. Scientists routinely work for both for regulators and the industry simultaneously.

Concern was expressed that Defra's response to recent studies seems to be focused on trying to pick small holes and then using them as a justification for inaction: 'If Defra is waiting for the perfect experiment to be performed, then they will be waiting a very long time' (EAC 2012, p3). On the other hand, methodological criticisms were made of research that Defra and the agro-chemical industry use to support their position.

The Wildlife Trusts noted that the burden of proof lies in the wrong place: 'Instead of taking a precautionary approach and insisting, that before chemicals are allowed into the natural environment, companies prove that they do not pose a significant risk, we are in the absurd position where these chemicals are already widely used and the burden of proof is on everyone else to prove that they do, with the consequent delay in action causing potentially devastating impacts on part of our wildlife' (EAC 2012, p112).

It is hard to reconcile Defra's decision not to take action under the precautionary principle when, as PAN UK noted, 'On one hand it [Defra] now admits that there are several areas in the current risk assessment procedures which need to be revised, yet on the other hand states that the current UK regulatory studies are adequate to reach a conclusion of 'no gross effects' in exposed hives' (EAC 2012, p 86), especially as Defra's responsibility includes the natural environment, biodiversity, animals, sustainable development, environmental protection and pollution control. It is not surprising therefore that Buglife have a proposed judicial review challenge in respect of Defra's decision not to make any changes to the regulation of neonicotinoid insecticides.

If a suspension of neonicotinoids was called for

A number of submissions called for a ban or suspension of neonicotinoids until the risks are fully assessed as loss of confidence in the regulatory process was articulated. Others noted that limited suspensions were in place in other European countries. Although the approval of an active substance is made at European level, individual member states are entitled to suspend products containing neonicotinoid insecticides on particular crops.

Conclusion

The EAC inquiry is likely to report in early 2013. The development of a new risk assessment for bumble bees and solitary bees, with an updated risk assessment for honey bees by Defra and EFSA should also be available soon. So, twenty years after the approval of imidacloprid as a seed treatment in the UK, 2013 should bring a long overdue reassessment of the risks to the honey bee from systemic neonicotinoid insecticides.

John Hoar, Fareham & District BKA
John.e.n.hoar@gmail.com

References

1. Defra, 2012. *Neonicotinoid insecticides and bees: The state of the science and the regulatory response*. 13 September 2012.
2. EAC, 2012. House of Commons Environmental Audit Committee, *Insect and Insecticides*.

Readers may follow the process at:

<http://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2010/insects-and-insecticides/>



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BBKA ADM 2013 Report

Saturday 12 January saw the first snow of the year, at least in Warwickshire, as delegates made their way to the Chesford Grange Hotel in Kenilworth, which must be thanked for hosting us and for providing such excellent facilities. Martin Tovey, President of the BBKA, chaired the meeting. He set himself the difficult task of closing the meeting around 3.30pm to allow those delegates who had travelled the furthest a reasonable start time for their return journeys. Sadly this proved too hard a task but he did manage to round up proceedings by 4.30pm.

The business of accepting the Minutes of 2012, the reviews of Matters Arising and Executive Actions was dispatched in good time before Martin handed over to David Aston to introduce the Lead Trustees' annual reports. David began by reminding us that we are beekeepers, most importantly, for the interest and pleasure that it provides. He spoke of the substantial changes seen in our environment. These include a reorganisation of government agencies. For example last year Fera was given responsibility for honey bee health. In January 2013 it was announced that this would go back to Defra. There is also the issue of the economic constraints and the impact of events such as the Environmental Audit and a House of Lords debate. Trustees have to advise members how to deal with these issues. David explained that economic growth is a top priority for the present government. Consequently there is an economic imperative for BBKA to fund itself. One of the things the Defra consultation on bee health policy (see page 20) will explore is how much we are prepared to pay. He assured delegates that the Executive spends a great deal of time and effort to ensure that liaison with the bee inspectorate has continuity and is effective. On the topic of the consultation he urged delegates to take part saying that the BBKA was represented during the drafting process and was able to make a significant input. David closed his remarks with some brief words about the need to raise capitation and ended with a plea for more members to share their skills in order for the BBKA to continue to serve members and to satisfy the continued demands arising from interest in bees. He said that we have established a reputation for knowledge and experience but we need more members to put themselves forward as Trustees especially if they can contribute skills in finance, marketing or governance.

Questions: Delegates asked questions about a number of the reports. On Public Affairs delegates asked why the BBKA did not attend the recent environmental audit committee. David Aston responded by assuring the meeting that the issue of neonicotinoids has occupied the Executive for some time. There has been a more extensive review undertaken in Europe to which the BBKA has made submissions. The European Food Safety Authority is due to report on that shortly and a decision was made to wait until it is published.

On the topic of the rising cost of *BBKA News* questions were raised about distribution, format and frequency. Tim Lovett explained that there has been a massive increase in cost because of the VAT added to postage on top of the increase in postage costs (i.e. more than the 40% we, as consumers, endured). He made the case for keeping the frequency. Other means of distribution are being reviewed and Doug Brown explained that a *BBKA News* website is being considered. Delegates were reminded that pdf versions are available in the members' area of the BBKA website.

Finances: Michael Sheasby took delegates through the financial

commentary explaining that in many ways 2012 was a year of transition with a significant change in make-up of the Executive Committee with many new Trustees. BBKA membership continues to grow but the mix of members has changed with more junior and partner members limiting the increase in income from capitation. Income from Adopt a Beehive and from donations is down. In response to questions from delegates Michael explained that the 'Adopt' offering had been very successful but now needs some refreshing and that plans were in place for this. The issue of funding from donations will also be addressed with more time and effort spent on this in the coming year.

Questions were raised about the poor performance of BBKA Enterprises. Michael explained that the disappointing performance was largely due to the write-off of unsaleable stock but that he believed that Enterprises is back on track. In answer to questions about the necessity for BBKA Enterprises to continue Michael reminded members that charities may not trade commercially and so need separate trading companies for commercial activities.

Budget: The Budget is targeting an increase in income both from membership and sponsorship and donations. The budget is difficult but achievable with the main risk being income. The meeting decided that the proposition to accept the budget should be amended to include a rider that the Executive Committee would review the income budget and report to delegates by the end of March. The budget proposition motion was then voted on and carried.

Capitation rates: Ahead of the debate about the proposal to increase capitation rates Jane Moseley gave an informative presentation detailing the comparative costs and benefits of membership to other organisations, highlighting the value of membership to the BBKA. Michael Sheasby reminded delegates of the value of the public liability insurance that BBKA membership brings. The motion to propose an increase in capitation rates was carried on a membership vote with almost 60% in favour.

Elections: There were three nominees for the three Trustee posts and all nominees were duly elected. They were serving Trustees Julian Routh and Peter Sutcliffe and, a new face on the executive, Andrew Royce. There were three vacancies for the exam board and only one candidate — Ken Basterfield; Ken was duly elected. Martin Tovey advised that anyone interested in being co-opted to the exam board should contact Val Francis.

Propositions: There were two Executive Committee propositions to make amendments to the Constitution; one covered Junior Membership and the other the powers of the Executive Committee to suspend Trustees. Both were carried. There were five Area Association propositions. Those to admit Jersey to full membership of the BBKA; a call for more support for the BBKA Swarm Collection Service; and a call for more education of the benefits of locally sourced queens, were carried. A proposition for a reporting scheme for farmers who sow pesticide-treated seeds was rejected, and a proposition around neonicotinoids was returned to the Executive for consideration.

The final task of the day was to make awards for 50 years of beekeeping to Tom Canning and David Charles. The Surrey Shield was presented to Staffordshire South BKA and the George Knights' Memorial award went to Medway.

Gill Maclean, BBKA Press Officer

Business Corner

New Executive Member: Andrew Royce

I am married with three children and by profession I am a solicitor. I am the Chair of Sedbergh and District BKA and my main beekeeping interests are queen rearing and promoting the understanding of bees to a wide audience. When not beekeeping I enjoy hill-walking, gardening, running, and running round after my family, cricket and fishing. I feel there are two strands to what I can offer the BBKA both as a beekeeper and as a Trustee.



like my efficient pragmatic advice, even if sometimes it is not the answer they want to hear!

I ran my own solicitor's firm, inherited from my father, which I then merged in 1998 with another local firm and then retired from in 2008 for a 'lifestyle' move to North Lancashire. I joined the largest local commercial firm of solicitors and now head its six solicitor strong commercial department.

As a beekeeper

I have kept bees since first becoming fascinated with them in the early 1990s. I first joined SE Herts BKA and then, on moving to the northern tip of Lancashire in 2008, I joined Sedbergh and District BKA. I managed to persuade the National Trust, at Sizergh Castle, to let me put two colonies of bees in their orchard and they have become a major feature in the garden which has led to running a number of events at the gardens which have proved very popular with the public. I have also given a number of interviews on Radio Cumbria about these bees.

In order to further my skills I have recently completed a Masters in Business Administration, part time, at Lancaster University. This has proved invaluable in enabling me to give wider ranging advice to my clients, especially in the areas of strategy and business development; a skill I am confident will be of use to the BBKA.

Andrew Royce, Sedbergh and District BKA

As a Trustee

One of the reasons for me putting myself forward was the article in August's BBKA News where a skills gap had been identified within the Executive Members. One of the skills identified was legal skills. I have been a business solicitor for nearly 25 years and the 'day job' is advising businesses of all sizes up to about £25m turnover on the day-to-day issues they encounter. Those clients tell me they

Correction: Twelve Days of Christmas

The Twelve Days of Christmas that appeared in December BBKA News was written by Bridget Knutson and Jane Scarse from Somerset BKA when they were studying for Module 5 and not by Ken Edwards. BBKA News editorial team apologise to the authors for this error.

BBKA Examinations

Successful Candidates for the Microscopy Certificate are:

AVON

Brian Downes, Kingsdown, Corsham, Wilts
Steve Mynard, Frome, Somerset

DEVON

David Corney-Walker, Newton Abbot
Mark Gibbons, Launceston, Cornwall
William Pyle, Tavistock, Devon

DOVER and DISTRICT

Patrick Murfet, Kingsdown, Kent

ESSEX

Christopher Branch, Chingford, London

GLOUCESTERSHIRE

Robert Snowdon, Lydbrook, Gloucestershire
James Vivian-Griffiths, Monmouthshire
Valerie Vivian-Griffiths, Monmouthshire

HARROGATE and RIPON

Richard Bond, Sadberge, Darlington, Durham
Shirley Bond, Sadberge, Darlington, Durham
Nigel Pringle, Kilburn, York, North Yorkshire

INDIVIDUAL MEMBERS

Caroline Beardsmore, Gaulby, Leicestershire

ISLE OF WIGHT

Ian King, Cowes, Isle of Wight

LANCASHIRE and NORTH WEST

Adrian Head-Rapson, Crosby, Merseyside

LANCASTER

Kevin Gilpin, Lancaster, Lancashire

LINCOLNSHIRE

Roger Britt, Scawby, Brigg, Lincolnshire
Helen Frankland, Crowle, Scunthorpe,

LONDON

Howard Nichols, West Norwood

NEWCASTLE and DISTRICT

Valerie Hawley, Newcastle upon Tyne

SHROPSHIRE NORTH

Carol Jones, Mollington, Cheshire
Joyce Nisbet, Wrexham, Clwyd

SOMERSET

Frederick Clarke, Chilton Polden

WORCESTERSHIRE

Steven Collins, Grafton Flyford
John Gower, Stourbridge, West Midlands
Helen Knight, Hadley, Droitwich
Timothy Vivian, Bromsgrove

YORKSHIRE

Wendy Maslin, Kirkella, Hull
Simon Maslin, Hull, East Yorkshire
David Riley, Wragby, Wakefield

Congratulations to all these successful candidates

Val Francis,
BBKA Exam Board Secretary

Exam Talk

31 candidates passed the Microscopy Certificate this year

New closing date for Microscopy Applications
is 31 August 2013

New end date for Basic Assessments
is 31 August 2013

Val Francis, BBKA Exam Board Secretary

Business Corner

BBKA Discussion Forum: A Useful Resource for Everyone

The BBKA Discussion Forum was started in 2003 and after several changes is still in existence, and can be accessed on the BBKA website. Internet fora, unless they are well moderated, often have a reputation of being unfriendly and dominated by those who seem to be permanently online waiting to slap others down. At one stage the BBKA forum suffered from these problems, but thanks to a good deal of work by the administrators and moderators this is no longer the case.

The facility is available to provide a pleasant place for beekeepers and non-beekeepers to post questions, receive answers, advertise events and comment about any aspect of beekeeping. There are a few sensible rules, but if they are broken the moderators will swiftly deal with them. In fact very little moderation is required now.

The forum is a useful learning resource and we wish to increase traffic so it becomes much more widely used. It is hoped that local BKAs will mention it in their courses, newsletters, websites and presentations. There are a number of categories, based on ability or topic. Some under discussion at the time of writing are:

- ❑ Thymolised syrup
- ❑ Shows and events
- ❑ BBKA Exam modules
- ❑ Managing hives through the winter
- ❑ How bees store pollen
- ❑ Condensation
- ❑ Microscopy courses
- ❑ High mite count after using Apiguard
- ❑ Types of hive
- ❑ Skep beekeeping
- ❑ Delving into the archives
- ❑ Beekeeping courses.

Anyone can visit the BBKA forum at <http://www.bbka.org.uk/members/forum.php> and view the posts. To make a contribution it is simple to register. All you need do is enter your BBKA membership number, which is to be found on your membership card and add a password. It is as simple as that! Once registered there is an 'Instant log-on' button so you do not have to do it manually.

Do take a look and if you like it please join in. You will be made welcome and hopefully will learn something or be able to help teach others.

Roger Patterson,
BBKA Forum Moderator

International Meeting of Young Beekeepers in 2013 and 2014

Following the article on young beekeepers in November *BBKA News* we have been contacted by five young beekeepers who have expressed an interest in being a member of the 2013 team. Work is now underway to start training and team selection from these five and those members of last year's successful team that are still within the age limits (12–16 years).

The competition started in 2010 as a means of bringing together young beekeepers from across Europe to meet and see beekeeping in a wider view. There are both social and competitive aspects to the meeting, but all of the young people are expected to have knowledge of bees and beekeeping; be able to handle a colony of bees and make a short national presentation to the other participants.

Going forward, the BBKA would like to encourage a wider involvement of young people in this event. If there is sufficient interest we would like to organise a national level event during this summer with involvement of young beekeepers who will be in the 12–16 year age range in 2014 and therefore would qualify for entry into the 2014

competition. The proposed event will consist of two parts, the first will contain some presentations from previous team members and a description of what is involved at the International Meeting. This will be followed by a shortened version of the competitive elements of the competition to give a more detailed idea of what is involved. This will begin the process of preparing and selecting the 2014 team in good time for the competition. The competitive elements will involve both exercises and bee handling so some preparation for this will be of benefit. Success in any of the BBKA assessments or modules will be seen as giving an advantage for selection.

This article, therefore, is a call to any young beekeepers and their parents or trainers who may have an interest in participating in future International Meetings of Young Beekeepers. We anticipate that this will allow us to build up possible future teams and ensure that lessons learned are passed to new teams to maximise chances of success. If you have an interest please contact the BBKA General Secretary.

Julian Routh, Lead Trustee,
Education and Husbandry

Honey Survey Prize Draw

The Honey Survey this year was completed by a record number of beekeepers, 2,712, and we are grateful to all of you for your time and input.

The results are extremely useful in helping to track variations in the amount of honey we are all achieving each year. It will not come as a surprise to most of you to be reminded of what a poor year it was in 2012, with an average of just eight pounds produced per hive, compared to an annual average of 36 pounds.

We are also very grateful to EH Thorne (Bee Hives) Ltd who donated the prize draw incentives for the honey survey, which I am sure played some part in achieving such excellent participation rates. The two runners-up who won £50 gift vouchers from Thornes were Victoria Logue and Anita Walsh, and the top prize of £200 of gift vouchers was won by Simon Roberts.

Congratulations to these three and thanks again to all BBKA members who took part in Honey Survey in October 2012.

Nicky Smith,
The Twelve PR

Your Letters



Can Brood Generate its Own Heat?

We are traditionally taught that the bees generate the heat that keeps their brood at its incubation temperature of about 35°C. My recent experience makes me question this.

At the end of the rape flow in early June I put clearer boards on my four productive hives. Each hive had two supers which were nice and heavy and I fitted the boards without closer inspection. Two days later I returned to remove the supers for extraction. The first three lots of supers had hardly a bee in them as one would expect. The fourth hive's supers were still packed with bees, so something was wrong. On closer inspection I could see capped brood throughout the top super, which in my case is built on drone foundation. Oh dear!

The queen must have got up in the supers and been happily laying drones for the last two weeks. I shook all the bees back into the brood box and took these supers home with the others to be extracted the next day. The plan would be to cut out and discard the sealed brood and then cut out and mash up any bits of honey comb. They were stored overnight in a stack in my kitchen which was unheated and, I guess, at about 18°C. When I came to deal with them the next morning, far from being chilled, they were still warm to the touch and felt 'body temperature' to the back of the hand without any bees being present. This suggests that sealed brood is capable of making its own heat by metabolising its own energy stores. I wish I had thought of measuring the ambient temperature and the temperature of the brood but sadly didn't, such was the pressure to get on and extract. Does anyone else

have any more information on brood heat metabolism?

Joe Dod, Harrogate and Ripon

In Response

You have made an interesting observation out of an experience which is only too painfully familiar to me and probably to a lot of others! You are right in saying that 'the books' (at least in my reading) do not mention that brood can generate heat. To be fair, I think this is because most general beekeeping books concentrate on what is useful for the beekeeper to know, and the most important fact is that brood needs adult bees to keep it warm if it is to survive and develop successfully. Honey bee brood is what is termed 'stenothermic', from the Greek 'steno' meaning narrow, and thermic meaning of temperature. The term means that they can only survive within a fairly narrow temperature range, roughly 32°C to 36°C. If left above or below that temperature for any length of time the resultant adult bee, if it survives at all, will be deformed in some way. This applies more to pupae than to eggs and larvae. As we know from grafting experiences, larvae can tolerate lower temperatures for some time.

Of course all metabolism produces some heat, and this is the case for honey bee brood too, although the metabolism in this case is at a relatively low rate. Brood does therefore produce some heat, but not enough for optimum development, and the brood has no way of regulating its own temperature, so the books are correct that brood needs adult bees to keep it warm. As with so many things in the bee world, honey bees have worked out a very clever system where thermoregulation is achieved by a lot of factors working together; the wax honey comb has insulating properties, the brood retains heat well (and its metabolism produces a little), and the adult workers add the finishing touch by boosting the temperature when and where necessary. Of course they can cool the brood nest too, when necessary, although this is hardly worth mentioning in the UK climate!

So I think your experience does not prove that all the books are wrong. I would have been interested if you had tested the temperature of the brood but my guess is that the larvae (I am assuming that it was open brood) would have gone on producing some heat as long as they could sustain their metabolism, and this coupled with the excellent heat retention properties of brood and wax honey comb, plus the fact that the 18°C in your kitchen is not that cold, would explain why you could still feel some warmth in the brood the next day.

Pete Sutcliffe, Master Beekeeper, Cheshire BKA



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The Design of Wax Foundation

Much has been written about how the regular hexagonal form lends structural efficiency to honeycomb. However, as any structural engineer will know, far more strength and stiffness is obtained when flat sheets are distorted into three dimensional curves. This is true for the micro scale when, for instance, pure hexagonal magnesium crystals are alloyed to break the regularity and the macro scale when metal sheets are bent into cans and cars. I suggest that if our sheets of foundation were to be rolled with at

least a less regular hexagonal base than the sheets may be stiffer and require less wax. The resulting comb would also be stiffer but may also offer many other benefits:

- Having drone cells and misshapen cells for stores more randomly spread through the matrix would result in flatter combs overall since large patches of drone brood would not distort neighbouring combs. The flatter combs would reduce injuries to the bees during manipulations.
- The more isolated drone brood may well inhibit the reproduction of the varroa mite. It seems that we only need an extra 1.5–5% reduction in population per day to achieve a stable varroa population. We only had varroa after we had foundation.
- Wax sheets would not curve so badly in storage.

Modern die manufacturing methods can make a base to whatever design can be drawn. There is a very good reason why manufacturers might actually want to replace their dies. The spacing of the discontinuities could result in perhaps not entirely random letters, such as EHT, MA or NBS, or even logos appearing on the foundation and in the drawn comb. The wax could also be coloured with the appropriate year colour to encourage comb renewal.

David Friend, Devon BKA

Disposal of Medication for Bees

I noted Tim Lovett's comments on the disposal of veterinary medical products in September *BBKA News*. He says that 'they should not be put into household waste'.

I had thought that the many products which we are strongly encouraged to use to counter varroa were 'medical products'. I have used Bayvarol /Apistan Strips, Apilife Var and Apiguard in recent years. Apistan says: 'Dispose of any unused product or empty containers in accordance with guidance for your local waste regulation authority'. Bayvarol says on its box, 'Dispose of used strips safely by wrapping in paper and placing them in domestic refuse'. Apilife Var says, 'Dispose of empty packaging and any remaining product in the household refuse' and Apiguard says 'Dispose of any empty packing and any remaining product in the household refuse'. If they are wrong, I and thousands of you readers should all be writing to our local councils now, and again each time we change to a new product, asking for advice. Clearly the companies want us to use their products. However, if there are problems of contamination and I have to drive to a special refuse dump with any remains, I shall probably opt out (after thirty five years). I do not expect doctors' surgeries or chemists to welcome a lot of beekeepers with little bags of assorted rubbish. I certainly see this as a significant disincentive to prospective new beekeepers. There would appear to be a very strong argument to give up all chemical varroa treatment.

Cdr Lister Hickson, Newbury and District BKA

In Response

Cdr. Lister Hickson's letter illustrates the variation in instructions to be found for the disposal of unused bee medicines. My comments were based on a discussion with the VMD. The principle stands that medicines should not get into water courses by flushing down the drain. With regard to not putting them into household waste, again one must try to remove the risk of chemicals entering water courses via land-fill or exposing refuse operatives. If your

local authority has made provision to deal with unused medicines then it would be best to follow their advice. As I noted in my original comment the VMD admits that there is not clarity in this area and we are pursuing the matter.

Tim Lovett, BBKA Public Affairs Director

In Further Response

The wording for the disposal of Apistan and for Apiguard is directed by the VMD. It is probably the same for Bayvarol and Apilife Var as in the UK and EU, all legal varroa treatments have to be registered as veterinary medicines. The exact wording for product disposal depends on the safety profile as judged by the VMD assessor at the time of registration. The wording on Apistan and Apiguard is correct so users should follow the label.

Dr Max Watkins, Vita (Europe) Limited

Emergency feeding — solid and liquid

Three factors, applicable to both solid and liquid feeding, appear to be somewhat glossed over in every article I have read. I am sure these factors are carefully considered by the experts but I, not being one, often need the obvious explained to me! Could someone have a go at these three for me please?

- **Knowing when.** In a recent article on feeding pollen the text ran: 'Do not assume that there is enough pollen in the colonies as shortages are common especially in early spring. If you find it is insufficient then feed etc'. How do you 'find it is insufficient' without taking the hive apart? As for the liquid feed, is there an easy way of knowing whether the remaining stores are mostly solidified ivy honey?
- **Queen excluder.** Where does the queen excluder go once solid or liquid food has been placed on the top bars of the brood box frames? Is the feed placed on the queen excluder? (I am assuming here that here we still have a super containing stores.)
- **Eke, super or brood box.** The placing of anything on top of the brood frames necessitates the use of an eke, super box or brood box to enable the crown board to be replaced; this is rarely mentioned in most articles. Some contact feeders seem to be so large that I wonder whether they would fit under a brood box! The generation of so much extra air space on top of the brood must surely run the risk of chilling.

Mike Barringer,
Fareham and District BKA

In Response

We need to put the first question in context. The article with this quoted text starts by saying it gives guidance for feeding pollen or substitutes if you think your area has insufficient pollen, or if you wish to stimulate early brood rearing. Most beekeepers in the UK do not have a problem with pollen shortage, except for certain areas such as East Anglia, where there are large tracts of arable monocultures. The answer lies in whether the area around an apiary has a plentiful supply of pollen. If you are unsure, ask an experienced beekeeper near you. If you do live in a pollen-poor area then probably colonies are running short, not having been able to store much before. By all means feed pollen or substitutes in this case, or if you wish to bring the queen into early lay. Indeed, one cannot tell if a colony is short of pollen without taking the hive apart. Alternatively, give them some and see if they take it. A colony with insufficient pollen stores will not start to raise brood until

more is available because the rate at which the queen lays is governed by how much she is fed by the workers. If they are flying and you can see them bringing in fresh pollen then all is well.

There is no easy way to tell if remaining stores are solidified ivy but it should not be a problem. It is a myth that bees cannot deal with crystallised stores or we would not be feeding them candy, because as long as they have access to water they will be able to consume solid honey. A large amount of water is produced inside the hive anyway, and workers will collect water when the weather allows them to get out in winter and spring. The classic light syrup fed for spring stimulation is a way of getting more water into the hive and it has been found that water is as much of a stimulus as syrup. It saves work for the water carriers.

How to feed depends on the time of year and state of the colony. For winter, if there is still a super containing stores for the bees to consume, the queen excluder should have been removed. The queen cannot go through it and the bees will be reluctant to leave her to go up to eat the stores. While bees have accessible food it is not an emergency because the bees are not starving.

If there is a need to feed sugar syrup because stores are low then where the feeder goes depends on its type, but the queen excluder should be removed. It is only there to prevent the queen from laying in the supers and if the new stores are to be put into a super, care must be taken that this is used by the bees and not left on the hive if a honey flow begins. If using a rapid feeder with a central hole and a short tube through which the bees gain access to the syrup then the crown board with a corresponding central hole stays in place on top of the brood chamber (or super) and

the feeder is placed over this hole. An empty super or an eke then needs to be placed on the crownboard and the roof replaced. There is then no empty space above the frames. It should be remembered that bees heat the cluster and not the surrounding air. Adult bees tolerate cold very well; it is excess damp which gives them problems.

Another type of rapid feeder such as the Miller and Ashford is a large wooden structure shaped to fit the hive exactly and is placed directly over the brood box. The crownboard may sit above it or may be left off. Again, there is no empty space above the colony and the roof sits on top as normal.

The other type is the contact feeder. In its simplest form this could be a jam jar with a few holes in the lid through which a few bees can take the syrup slowly. It is placed upside down over the hole in the crownboard and an eke or empty super or brood chamber surrounds it, as above, to support the roof. Other types such as frame and entrance feeders do not impinge on this query.

Solid food in the form of a candy block, for example, also needs an eke or an empty super. The block is placed directly over the hole in the crownboard and the eke/super added to support the roof. In an emergency it can be put directly on the frames and the crownboard replaced above the eke/super. The extra space may make the bees work a bit harder to maintain the cluster temperature but it is the lesser of two evils.

Bridget Beattie, NDB

Your Letters continues on page 34

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Diary of Events

16 February. Somerset BKA Lecture Day at Kings of Wessex Academy, Cheddar. Peter Whyte, Peter Guthrie, Adam Vevers and Dr Stephan Wolf. Details from Caroline Butter 01934 742075 email: okapi.bhive@uwclub.net

2 March. Bucks Beekeepers Association 17th Annual Seminar: Not just beekeeping. Memorial Hall, Wendover, HP22 6HF. Speakers: Ivor Davis (Pheromones) Celia Davis (Beekeeper vs bee) and Peter Brash (Bees and the National Trust). £12, inc lunch. Book through John Catton 01494 726616 or richard.catton1@ntlworld.com

2 March. Wisborough Green BKA. Pulborough Village Hall, West Sussex, RH20 2BF. One-day course for beginners, improvers and non-beekeepers; largely follows the BBKA Basic Exam syllabus. Enquiries: roger-patterson@btconnect.com; Tel: 01403 790 637/ 07976 306 492. Booking: Gordon Allan petworthgordon@btopenworld.com via the form available at www.wgbka.org.uk Tel: 01798 343470

8-9 March. Ulster BKA, 69th Annual Conference. Focused on real beekeeping issues and of interest to novice and experts. Speakers Ivor Davis, Mervyn Eddie, Jonathan Getty, John Hendrie, Pam Hunter, Ethel Irvine, Philip McCabe and Keith Pierce. Enjoy the fun and visit the trade stands. Early booking discount. Email:

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Do You Wish To Get Some Formal Teacher Training?
The BBKA has acquired limited funds for course fees and possibly expenses for members to take the C&G 7303 Preparing to Teach in the Lifelong Learning Sector. If you are interested please contact julian.routh@bbka.org.uk.
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Julian Routh, Lead Trustee Education and Husbandry

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Imported Bees

Readers are reminded of the BBKA's policy to discourage the importation of queen bees and colonies from outside the UK. Prospective purchasers should satisfy themselves of the origin of bees offered for sale.

ubkaconference@gmail.com or web: www.ubka.org

16 March. NW Forum for Queen Rearing, Truckhaven Carnforth. Details from Fred Ayres at bees@al-consulting.co.uk or telephone 01524 811978.

19 March. Pinner & Ruislip Beekeepers Beginner's course. Every Tuesday night, 7-9pm for 4 weeks. Contact Perry on 07984 426008 or email at perryforan@sky.com.

23 March. North of England Beekeeping Convention, The Beacon, Newcastle; 9am-5pm. Speakers: Eric Robson (Radio 4's Gardeners' question time), Keld Branstrup, Michael Badger; trade; book stands and displays. Application forms: www.nebees.org; all welcome.

3-5 April. Microscopy for Beekeepers 2013. University of Bath. A three-day course with residential option for those preparing for the BBKA Microscopy Exam. Further details www.microbees.co.uk Tel: 01373 300 748

6 April, Saturday, 11am. LBKA, Lincoln District. Sale of bees and equipment. County Showground, Scampton, Lincoln. For details tel: 01636 610349; 01522 522679; 01522 730365; or 01427 788550.

12-14 April. BBKA Spring Convention, Harper Adams University College, Newport, Shropshire.

The Mystery of 'Oxalic Acid 3.2% Solution'

Ever wondered what a 3.2% solution means in the case of oxalic acid? Confused by the BBKA web site 'Preparation of Oxalic Acid'? <http://www.bbka.org.uk/members/forum.php?t=5579>. Do you wonder where 75grams in 1.67 litres of sugar solution (1kg sugar + 1 litre water) comes from? If you do you are probably not alone. So where does it come from? What is a 3.2% solution?

For a start, the definition of a 'percentage' solution is confusing. We are familiar with £5 being 25% of £20 [i.e. $(5/20) \times 100$]. A simple enough calculation and no conceptual difficulties since the £5 and the £20 are both amounts of money. They are the same thing, if not the same value. In the case of the percentage solution for oxalic acid this is not the case and what is meant here is a 3.2 weight/volume (w/v) percentage. A very strange thing indeed in my opinion. Strange because it is equivalent to expressing four apples as a percentage of ten pears; $(4/10) \times 100 = 40\%$. Who would ever think a 40% fruit mixture meant 0.4 *pommes per poires*? Still, who are we to question the chemists of this land? So we continue with this strange definition, 3.2% means weight (kg) of oxalic acid, divided by the volume of the mixture in litres, multiplied by 100 to get it as a percentage. A percentage of what is debatable but who cares? The bees certainly do not!

With this definition, a simple-minded calculation might be carried out as follows: 75g (=0.075kg) of oxalic acid in 1.67 litres of sugar solution would give us $0.075 \times 100 / 1.67 = 4.48\%$!! What is wrong with this? To answer this we must ask what that 'white stuff' is that we carefully measure out on the scales. Read the label — it says: Oxalic acid dihydrate. What is the dihydrate bit then? The chemical formula for this stuff is $H_2C_2O_4 \cdot 2H_2O$. Do not be put off by this formula. You know what water is; it is H_2O and if you look, there it is on the end of the formula, except there are two lots of the water molecule: $2H_2O$. Hence the dihydrate. The bit at the front — $H_2C_2O_4$ — is the oxalic acid. Two hydrogen atoms of atomic mass 1, two carbon atoms atomic mass 12 (carbon atoms weigh 12 times that of the unit hydrogen atom) and four oxygen atoms atomic mass 16. Total molecular mass of oxalic acid dihydrate is therefore 126 (go on, add them up) and that of oxalic acid without its water bit is 90. So, of the 75 grams of oxalic acid we add to the solution only $(75 \times 90 / 126) = 53.6$ grams is OA. The rest is water!! The volume of this stuff is rather small compared with the 1.67 litres of sugar syrup so the w/v% of this is $(0.0536 \text{ kg} / 1.67 \text{ litres}) \times 100\%$ — wait for it ... wait for it ... 3.2%.

Ron Atkinson, Co Armagh

Another Bee Mystery

It is Friday 5 October 2012 at 8am and we are off to Cornwall for a week's holiday. I am walking around the garden with my early morning mug of tea and I hear the unmistakeable sound of bees taking to the air. Sure enough the bees were piling out of one hive and clustering in two groups on the front of the hive. There were signs of dysentery with the bees defecating in the air. The colony had finished its six-week Apiguard treatment and had refused to take down any syrup for three weeks, but in the last few days it had taken about four pints. What on earth were they doing? Was it a new supersedure queen coming out to mate? What should we do? We decided to leave them for a bit and pack up the car, then go back and look at them later.

Inside the hive there was not a bee to be seen. There was no larvae or pupae, but there were lots of eggs laid in a good pattern. The bees had moved into one big cluster on the front of the hive by now. They just did not seem to like something in their hive, so

we gave them a new one with drawn comb and some frames of sealed food. We hived them, put a feeder on the top and departed for Cornwall. Just a week later we opened the hive again, having no idea what to expect. They had not taken any of the new batch of food, but inside there were lots of eggs and young larvae, all perfectly normal, plus my 2012 marked queen! I doubted they would survive the winter if they refused to take any more syrup. The season was marching on and the nights getting colder so I considered giving them candy in the hope they would take that. .

It is now 14 December and the colony is still alive. I have tested them for nosema and acarine and in this respect they appear to be quite healthy. I suppose the dysentery could have been due to the fact that the syrup sat on the hives for several weeks before they touched it. The varroa drop is very light. I should also say that the queen was clipped and I suspect that the colony might have disappeared completely if she had been able to fly. Does anyone have an explanation for their extraordinary behaviour?

Paula Edwards, Dorset BKA

Assessing Stores Through Winter

We all know it is vital for our bees' survival that they have enough stores through winter. The traditional way of checking this is 'hefting' or slightly lifting the hive. Even in skilled hands this is necessarily a somewhat crude measure and I think there is a better way. To accurately assess the stores in your hives you need a spring balance attached to a loop of wire. You also need to put a small screw or hook either side of the hive floor. Remove the roof, attach the wire loop to one side of the floor and take a reading as the hive just starts to lift off the stand. Repeat the other side and add the two together. The sum of the two is the gross weight of the hive.

If you now deduct the weight of the varroa floor, brood box, crown board, frames, wax and bees you have the weight of the stores. Weighing the hive parts and estimating the weight of the bees and wax, I estimate the weight of a national brood box and parts as above at about 11kg. So, for example, if your weight readings are 12kg plus 12.5kg, total 24.5kg, less 11kg, this gives about 13.5kg of stores. For brood and a half, I deduct another 5.5kg. Clearly, the method works with any hive provided the estimate of deductions is reasonably accurate. The weight estimates relate to my hives and others could vary, but, treated with caution and allowing some margin for error, I feel that the method gives a better guide than hefting and is very quick and easy to do.

Gerald Hodgson, Richmond BKA, Yorkshire

In Harmony

Earlier this year we held a fund raising event at The Somerfield Hospital in Maidstone and used the proceeds to sponsor a bee hive. We sold packets of meadow seeds and encouraged our staff to plant them to support pollinating insects. I sprinkled on my allotment (opposite) and I thought the title 'In Harmony' perfectly expressed the relationship between man and bee!



Connie Stocker, BMI, The Somerfield Hospital



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