Beetalk December 2022

General info and news about bees

Hello and welcome.

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

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

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

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

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

Hope you enjoy. And to everyone of our readers. Have a great Christmas and all the best wishes for the coming year, both in health, wealth and happiness, and may your beekeeping year be a great one.

Michael Birt (Editor)

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

Please e-mail them to the editor

at

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GLIMPSES FROM THE PAST

Bonner's name is so much more widely known than his works on beekeeping, that I doubt not many readers of our Journal will be glad of a few notes culled from his rare book. Bonner was the twelfth child of a handloom weaver, of Coldingham, in Berwickshire, and seems to have received a fair education. He followed his father's occupation, and became the author of a work called “Practical Warping Made Easy." His father was an enthusiastic bee-keeper, owning as many as a dozen colonies at a time, and in good seasons made as much money by his bees, as nearly purchased oatmeal sufficient to serve is numerous family for a whole year. He purchased with a single season's wax a large quarto Bible (an expensive article in those days), which served as a family book ever after, and his home was always supplied with honey and mead. The old man worked at his loom till within a few days of his death, in the 86th year of his age. James, our author, was thus a born bee-master, and so great was his interest in bees that he, about the year 1765, travelled all the way to London to get a P A GLIMPSES FROM THE PAST 694 chance of conversing with the famous Wildman. The latter happened at the time to be in France, so Bonner had to return without seeing him, but he solaced himself by the possession of a rich haul of bee books, picked up on London bookstalls. He tells us he bought every book on bees that he could find. After this, and under the impulse of fresh discoveries day by day, he became so absorbed in his studies and experiments, that during the honey season he hardly took any sleep for whole weeks together. At last, in 1789, he published his first book, a "Treatise on the Management of Bees," which was well received. In succeeding years he made so many discoveries and improvements, that he resolved to embody all he knew in the larger work by which he is better known, “A New Plan for Speedily Increasing the Number of Hives in Scotland," etc. This work was issued by subscription in 1795, and was directly under the patronage of the "lords and gentlemen" of the Highland Society, the then representative of the great Agricultural Society of the present day, at whose shows the bee tent is a regular attraction. As affording a fair contrast between the best principles of bee-keeping in the last century and those of the present day, I note a few of the more prominent of Bonner's ideas : Honeydew. He speaks of it as an exudation of the saccharine juices of plants, which, in some cases it undoubtedly is, but he seems to have no idea that the bulk of it is the excretion of aphides. Crude and Perfect Honey. He decidedly differs from Mr. Pettigrew in this matter, having satisfied himself that the nectar as gathered from the flowers is true honey, afterwards thickening only from the evaporation of its watery particles. I had an illustration only yesterday of one way in which bees get rid of the superfluous water in the sweets they gather. Over a large feeding trough where I was supplying my bees with sweetened water, I could see in the sunlight that almost every bee that rose with its load, ejected a spray of water. So rapidly did the water find its way from the honey sac to the excretory organs of the bee, that the moment it rose it was enabled to get rid, I should suppose, of half the weight of its burden in the form of water. I have also noticed this in the case of bees returning from the fields during the honey season. Pollen and Wax. Although humouring the prevailing notion that the bees gathered wax and carried it home on their legs, by culling loads of pollen and loads of wax, Bonner argues very sensibly his opinion, that wax is an exudation from the body of the bee, as milk from the cow, silk from the spider and silkworm, or wax from the human ear. Smotheration" by Brimstone. This he utterly condemns as "a barbarous practice” to be ever deprecated. Who would have supposed that such a practice could have continued to the present day.

BAILIFFS London paper, 7th October 1885

County-court bailiffs have, from time immemorial, been subjected too much unpleasant treatment, but probably the most remarkable mode of assault yet discovered for them was the subject of a trial at Northampton, England. It transpired that on the bailiffs entering a house at Woodford to levy an execution, the occupant, named Samuel Gunns, threw a hive of bees at them, and immediately locked the officers in a room with the infuriated insects. Pleasant for the bailiffs! Gunns is evidently a man of inventive genius.

EARLY SWARMING The Times, 20th February 1890 In England, the bees were reported to be swarming in February. While a young man named Flint, son of the bailiff to Mr. E. Foster, of Woodbury, Tempsford, Bedfordshire, was engaged in the fields one day last week, he suddenly heard the humming of bees, and on looking around he was astonished to see a splendid swarm of bees which had alighted on a shrub. The youth's father is an amateur bee-farmer, and being himself quite an expert, he soon obtained a hive and secured the whole swarm, which is said to be a fine one. It was subsequently presented to a labouring man residing in the neighbourhood.

The Biology of Mating

This is a recollection of a talk at the BBKA Spring Convention by Dr Jochen Pflugfelder. He started his presentation with a BBC video which showed a captive queen at the end of a long rotating arm pursued by drones. Mating is very quick, only a few seconds between drones. Each provides enough sperm to last 5-7 years. That from all the drones mixes in the spermatheca so all are represented in the workers produced. [He speculated that drone laying queens might be a way of boosting the drone population.] Experiments in steep Austrian valleys showed that drones ‘home in’ first on the queen pheromone 9ODA, then on that from the tergite glands; surprisingly, he said nothing about sight. Drones come from a radius of up to 5 km, with some 16,000 waiting for each queen so reducing the chance of brother-sister mating. They had found that c.240 colonies were represented in each drone congregation area (DCA), a minimum of 1,000 were required to form a DCA and, with a choice of DCAs, drones preferred the nearer, queens the further. But further DCAs are riskier; 12% did not return. For queens, mating flights last less than 30 minutes. DCAs have clear boundaries; queens 20 metres outside are not noticed. It is thought that three are 9 species of Apis bees. On the slopes of Mount Kinabalu in the island of Borneo six are to be found. All use the same pheromones for mating. They avoid confusion partly by establishing their DCAs at different heights but mainly by using different periods of the day; the smaller the bee, the earlier their mating flight. Night comes quickly in the tropics. Unbelievably, the giant honey bee, Apis dorsata, makes its mating flights after dark. Plotting the times at which the different species fly shows clearly that as each species stops, another starts. Fascinatingly, these eastern bees do not fly when Apis mellifera would, although, of course, it is not present. Interestingly, it was found that carnica and ligustica establish DCAs at different heights. Joe Homer, a New South Wales bee farmer, produces some 250 queens a week. He employs ‘moonshine mating’, an adaption of the principle of time separation. This ensures his queens mate only with the drones he has raised for the purpose. This he does by keeping queens and drones in a cool dark house shut in with queen excluder and only released at 4pm when their usual mating time is over and stray drones have returned home.

Neonicotinoids were hailed as safe and effective, but they are far from benign!

Victorian gardeners were familiar with the alkaloid nicotine as a pesticide, and very good it is too at killing almost anything that moves. Unfortunately that includes people - the nicotine in three or four cigarettes would kill you if you absorbed all of it. As a result, nicotine has not been available to amateur gardeners for some time, and approval for professional use was withdrawn in 2009. But in the 1970s chemists developed a new class of insecticides that, although not closely related chemically to nicotine, share the same mode of action and were thus christened neonicotinoids.

Like nicotine, neonicotinoids are extremely effective nerve poisons, but unlike nicotine they are really only toxic to insects and are very safe to use. Neonicotinoids have several other desirable features. Their mode of action is different from other major classes of insecticides such as pyrethroids or organophosphates, which means that even if insects had already evolved resistance to those earlier chemicals, they would have to start from scratch with neonicotinoids. T

hey are also highly systemic, that is easily and rapidly moved around inside the plant. This means that they can be applied as seed dressings, which are then absorbed by the young plant when the seed germinates, doing away with the need to spray and more or less eliminating the risk to non-target organisms.

This combination of effectiveness and safety, both to humans and other animals, has resulted in neonicotinoids becoming the fastest growing type of insecticide in the world, worth 1.5 billion Euros in 2008. Nowadays, 99.8 per cent of maize seed sown in the United States is treated with neonicotinoids (the other 0.2 per cent is organic). Several members of the neonicotinoid family, such as Imidacloprid and Thiacloprid, are familiar garden insecticides in the UK. Thiacloprid, for example, is the active ingredient of Bayer Provado.

But no sooner was the crop protection industry congratulating itself on discovering the pesticide equivalent of the philosopher's stone than problems began to emerge. Because neonicotinoids are so effectively transported around the plant, they can turn up anywhere, including in pollen and nectar.

Admittedly, the quantities involved are minute: in lab studies, the single LD50 dose (i.e. that kills 50 per cent of dosed individuals) is about 100 times the amount a honey bee might acquire from a day's nectar foraging. But a single bee might visit a field of treated oilseed rape every day for several weeks, eventually consuming quite a large dose. Not only that, there's always the possibility of so-called "sublethal" effects reducing bee lifespan or impairing foraging ability; these subtle effects are much harder to detect than straight mortality.

The effects In recent years, numerous studies have tried to estimate how dangerous neonicotinoids are for bees. Most have used Imidacloprid, although there's no reason to believe the other types behave very differently, and most have also used honey bees, largely for practical reasons, although they are not always the most important pollinators, in gardens or elsewhere. These studies have found generally, that neonicotinoids don't actually kill bees at the sort of doses they would normally experience. Therefore it also seems unlikely that neonicotinoids are responsible, at least on their own, for so-called Colony Collapse Disorder (CCD), in which whole colonies suddenly expire.

The sub-lethal effects are more interesting. We're talking here about a bee's ability to perform a variety of tasks, including learning and remembering the location of good nectar sources, and her ability to return successfully from a remote nectar source. The effects are subtle, but James Cresswell from the University of Exeter, found that if he analysed the data from all the studies together, a consistent picture emerged.

The performance of bees exposed to the sort of dose they might receive from foraging on treated oilseed rape or sunflowers was reduced by anything from 6-16 per cent. That may not sound much, but it's like waking up with a hangover every day. Except a hangover won't kill you, but a bee that loses her way is a dead bee.

Those results come from studies in which bees were fed realistic doses of neonicotinoids. In contrast, several studies have failed to find much effect on bee colonies under field (or close to field) conditions. The reason seems to be that honey bee colonies are naturally very variable in the sorts of things measured, such as worker bee lifespan and honey yield, and no study so far has used a sample size big enough to detect the small effects of neonicotinoids with any real confidence.

Bumblebees What about other bees? Bumblebees are abundant in gardens, where they are probably more important pollinators than honey bees, and several studies report effects of neonicotinoids that are very similar to those in honey bees. Bumblebee expert Dave Goulson's team at the University of Stirling have shown that bumblebee colonies exposed to low doses of Imidacloprid grew more slowly than control colonies and, crucially, produced far fewer queens, potentially reducing the number of colonies in subsequent years. This result is consistent with other studies showing that neonicotinoids make bumblebees lethargic and reluctant to forage. Extrapolating all this work to the real world is complicated by various factors.

On the one hand, especially in gardens, bees are likely to forage on a wide range of plants, only some of which will have been treated with pesticides, thus diluting the effect. The bees most at risk may be those that forage on mass flowering agricultural crops like rape. On the other hand, the effects of pesticides may be combined with those of other stresses, such as starvation or disease, and the combination may be much worse than either on its own.

Since one effect of neonicotinoids is reduced foraging ability, affected bees may often be short of food, which could explain the poor queen output in bumblebees. In one French study on honey bees, a dose of Imidacloprid too low to cause any harm on its own had a much worse effect when combined with infection by Nosema, a common microsporidian parasite of bees.

Nosema has been suggested as a cause of CCD, and together with neonicotinoids it looks like as good an explanation as an

Bumblebees get help from their honeybee rivals

Bumblebees can use cues from their rivals the honeybees to learn where the best food resources are, according to new research from Queen Mary, University of London. Writing in the journal PLoS ONE, the team from Queen Mary's School of Biological and Chemical Sciences explain how they trained a colony of bumblebees (Bombus terrestris) to use cues provided by a different species, the honeybee (Apis mellifera), as well as cues provided by fellow bumblebees to locate food resources on artificial flowers.

They found that the bumblebees were able to learn the information from the honeybees just as efficiently as when the information came from their own species, demonstrating that social learning is not a unique process limited members of the same species. PhD student Erika Dawson, explains: "Most social learning research has focused on learning between members of the same species.

But in the same way that human engineers can pick up useful tricks from animals (such as using bird aerodynamics to design planes), animals might of course learn from different species where the best food is, where predation looms or where the best place to nest can be found. "We wanted to determine whether animals can use any social cue to enhance their environment, even if they come from another species that share their habitat, resources or predators." The results show that information learnt from other species can be just as valuable to an animal like the bumblebee as information from their own species.

Bees would have opportunities to learn cues from their own species and other species to an equal degree in the wild, as they often share the same flower species as a source of food. This is particularly true for large flowers such as sunflowers, which are often fed from by multiple pollinators simultaneously. The results also show that competition between the two species may be much more severe than previously assumed, as Erika Dawson explains: "If bumblebees use individual exploration and copying of their fellow bumblebees to identify rewarding plants, but also use the information provided by a rival species (ie honeybees), this could have important ecological implications for community structure and formation, and may help us better understand the impact of competition within natural pollinator communities.

ANAPHYLAXIS AND BEE STING THERAPY

May 10th 2012, 6pm is a day I remember! I want to tell you of my experience so far - just to keep you aware of how we can, for whatever reason, become allergic to the venom of our honey bees' stings. After five years of handling bees at home and being stung on several occasions, I received a single sting to the top of my forehead while showing a non-beekeeper my garden; this bee had got tangled in my hair and panicked. My visitor looked a bit nervous so I told him to go back to the house away from me in case any others came out as backup. Meanwhile I had the most severe pain in my head which also affected my ability to think as whooshing noises came in my ears! Within seconds of this I knew things were not good and got back to the house to take an antihistamine (my son's hay fever tablet), all the time pretending I was ok so as not to frighten the man who had come to buy honey.

I insisted I was OK and sent him away as politely as possible, took a tablet and then itching started under my feet and in the palms of my hands, my stomach cramped and my lips were starting to go numb. As this was happening, a new beekeeper arrived to collect the swarm I had offered him earlier. He took one look at me saying: "Marie, are you alright? Your face is like beetroot". Me being me and not wanting to cause a fuss, I still insisted I was fine, while scratching my palms and feeling fearful.

The swarm was boxed and taken away and, with much persuasion, my new beekeeper left with his prized possession. I was now 10 minutes into being stung, my hands had gone purple and to make matters worse, my chest and back had big itching raised lumps appearing, my mouth was numb, my tongue the same. I still had stomach cramps and sloshing noises in my ears. Now I was scared but not exactly alone, my son was upstairs so I shouted to say could he come down as I had been stung. He shouted "SOS"! I needed to get to hospital fast, yet inside I was still trying to behave as if there was no panic to be made.

Mark took one look at me, moved faster than I've seen in a long time, quickly debated ambulance versus driing to A&E. And off we went. Halfway there I started to get pain up my chest and into my collar bone so now I wished we had called 999. It was stupid to go into A&E and stand at a desk while feeling that you might die any minute. However, I did not have to wait but was taken straight away to be treated with steroids. These helped. Given time, I started to feel better and, two hours later, I was sent home. I learned a lot from this experience.

Apparently, the saving grace was the fact that I had taken an antihistamine almost immediately after being stung! The sting should have been removed sooner! (I did know but forgot due to being disoriented.) Don't pretend you are ok! Phone 999! My doctor was very supportive after giving me an EpiPen and a lecture on 999 calls. She understood how frustrated I was, but was amazed that I should want to continue keeping bees. After hearing my reasons, she soon became enthused at helping me. She wasn't aware of treatment by desensitization until next day when another beekeeper came in with the same problem.

He was aware of the procedure and hence we were referred to Nottingham Queen's Med. Immunology dept.

The treatment started in early September. It consists of a weekly injection of venom, starting with small doses, building up over a 12 week period to full dose of honey bee venom equal to 2 bee stings Once this level is achieved without major side effects, it then needs a maintenance dose every 6 weeks for 3 years. I am now on the maintenance dose and looking forward to manipulating the bees this spring although at this stage I will not work alone until I am sure all is well! In other words, until I have been stung without side affects.

My EpiPen will be with me just in case. Also in a plastic cover I have an action plan written out for others to follow if necessary So, my fellow beekeeping friends, bee ware! Stay aware of the facts, it can happen to you at any time, even after 20 years of stings

To many newcomers this may sound a bit scary but cases are rare. In my case, it is possible that the medication I was taking at the time contributed to the reaction. I hope this may be of interest to you.

I am not a medical expert but I do now have some knowledge of anaphylaxis! Marie O'Gorman, The Derbyshire Beekeeper

THE BIG ADVENTURE

For the next two months I am going to look at swarming in some detail because, in many ways, this is the most complex and important process that honey bees undergo. Swarming is the reproduction of the super-organism so that two, or more, exist where there was only one before. Many colonies will swarm every year, given the chance and this is a measure of their biological success as they are getting their genes spread further afield. Now, of course, to us swarming is often a nuisance, a cause of extra work (trying) to control it and often a source of great inconvenience when we fail to do so, but I am not concerned with all that, but rather with the methods used by the bees to organise the whole process. The beginning What starts this urge to swarm?

The colony builds in the early part of the year and reaches a point where it has a great number of young bees, a large amount of sealed brood and a shortage of space in the brood nest. This is usually some time in May, but can be earlier or later. Conditions are right for successful colony reproduction, but the initial trigger appears to be queen pheromones.

At least two are involved: Queen mandibular pheromone (QMP) Queen tarsal (Arnhart's) gland pheromone (QTP) (see February WB) Both of these pheromones are less effective when the bees are very crowded: the QMP does not get to all the bees and the queen is restricted in her movements so that the QTP, which is oily and is produced from the queen's feet and spread around as she walks, does not get to the edges of the combs.

Add to this the fact that any queen produces lower levels of pheromones in general as she ages and everything comes together. Not that the queen needs to be old as many beekeepers think. A seven-month old queen has very much reduced levels, so that a queen reared in June will be more than ready to swarm by the following May. Under these conditions queen cells are started.

Whether the queen lays an egg in each or whether the workers move eggs is a moot point. Certainly many workers believe that eggs are moved by workers but, once occupied, those developing queen cells act as cues for the behaviour that follows. The queen larvae have pheromones of their own which enable the workers to recognise them and feed and tend them accordingly (see June WB). Getting ready As the queen cells develop quite a few things go on in the colony in preparation:

The queen is chivvied and jostled by the workers. Both queen and some workers pipe. . The queen is slimmed down by rationing her food and she drastically reduces her laying. Bees in the brood nest fill their crops with honey. Mid-aged bees do not develop into foragers but stay relatively 'young' so that they are a flexible workforce. About three days before the swarm leaves, scout bees start to search for a new home. Coming out This is the exciting bit! Once the first queen cell is sealed (indicated by brood pheromones) the whole colony becomes unstable and excited. The queen is pushed around a lot, she pipes and some of the workers pipe too. Finally buzzing runs start: a worker rushes across the comb in a straight line, buzzing its wings as it goes, until it bumps into another worker. They antennate briefly and then each one rushes off in different directions, again performing a buzzing run.

Once a large number of bees are behaving in this way, the excitement reaches a peak and the bees pour out in a swarm. The queen leaves with them, not necessarily voluntarily and the bees fly round near the hive in the manner we are all used to. They start to land somewhere nearby, with the queen. The combined QMP and Nasonov pheromone from the workers (see January WB) attract the flying swarm, which lands and forms the familiar cluster.

Two components of QMP appear to function here, 9-ODA to attract the bees and 9-HDA to stabilise the cluster . If there is no queen, as can happen if the queen is clipped for example, the cluster will gradually break and return to the hive. Nasonov pheromone on its own, while serving as an attractant, will not maintain the cluster. T

here we are going to leave our swarm for this month, hanging from its branch five feet from the ground waiting for you and your skep, but I want to stress the fact that, so far in this process, the bees have used pheromones, both from the queen, the workers and the brood, piping, again from queen and workers and vibrations in the form of buzzing runs, as means of control and communication. Next month we will see how this complex process continues with home-finding and the issue of casts.

Bees Guide Dementia Research How bees turn back the clock

Researchers at Arizona State University and the Norwegian University of Life Sciences have discovered that older honey bees can effectively reverse brain aging when they take on duties normally handled by much younger bees. Their research showed that tricking older foraging bees into doing social tasks inside the nest causes changes in the molecular structure of their brains.

Suggesting that social interventions may be used to slow or treat age-related dementia. Studies have shown that when nurse bees stay in the nest and take care of brood, they remain mentally competent. However, when bees fly out foraging they begin aging very quickly.

After just two weeks, foraging bees have worn wings, hairless bodies, and more importantly, lose brain function – measured as the ability to learn new things. The researchers discovered however, that the aging pattern could be reversed. How the study was done They removed all of the younger nurse bees, leaving only the queen and brood.

When the older, foraging bees returned to the nest, activity diminished for several days. Then, some of the older bees returned to searching for food, while others cared for the nest and brood.

Researchers discovered that after ten days, about 50% of the older bees caring for the nest and brood had significantly improved their ability to learn new things. They saw not only a recovery in the bees' ability to learn, but also discovered a change in proteins in the bees' brains. They found Prx6, a protein also found in humans that can help protect against dementia – including diseases such as Alzheimer's – and they discovered a second 'chaperone' protein that protects other proteins from being damaged when brain or other tissues are exposed to cell-level stress.

What the findings mean In general, researchers are interested in creating a drug that could help people maintain brain function, which may take many years. However, since the proteins in people are the same proteins bees have, maybe social interventions – changing how we deal with our surroundings – is something we can do today to help our brains stay younger.

Question - What is Honey?

Whilst the principle raw material of honey is nectar collected from flowers, what about describing its actual composition. Yes, it is sugar plus some essential oils, traces of minerals and water, but unless you studied, and can still recall your chemistry, biology or domestic science subjects, you may well struggle to even appreciate that it involves glucose, fructose and sucrose… whatever they are. So lets try to get down to basics. Sugars are carbohydrates, comprised of Carbon, Hydrogen and Oxygen molecules, described by the number of sub-units contained. Glucose … is a monosaccharide ($C_6H_{12}O_6$) meaning a 'single sugar unit'. The most common sugar found in nature it can occur on its own or in combination with other sugars to form larger molecules, such as sucrose. Although it doesn't taste sweet, starch is made up entirely of long chains of glucose, and glucose itself tastes slightly less sweet than sucrose as it doesn't bind as tightly to the sweetness receptor in the human mouth. Fructose … known as fruit sugar, is also a monosaccharide, but not as common as glucose in nature. It's much sweeter than either glucose (or sucrose) and can be found either on its own or in combination with other sugar units.

A major difference between fructose and glucose is that our cells require the hormone insulin to cause them to take up glucose from the bloodstream, but when we eat fructose, our cells can absorb it without insulin. Sucrose… known as table sugar, is a disaccharide made up of glucose and fructose linked together ($C_{12}H_{22}O_{11}$). When we consume sucrose, we must first digest it into glucose and fructose before we can absorb the constituent components into the bloodstream.

From there, our cells take up glucose and fructose to burn them for energy or store for later use. There are other disaccharides, that can make up over 7% of honey's composition; maltose, kojibiose, turanose, isomaltose and maltulose. In addition, there are medium sized carbohydrates known as oligosaccharides that contain more than three simple sugar subunits, often made of mono and disaccharide. Some nectars are mostly sucrose, some are evenly divided among sucrose, glucose, and fructose, and some are mostly fructose. Once the bee draws nectar up through its proboscis, the liquid passes through the oesophagus into the honey sac where glands secrete enzymes into it that work to break down starch into smaller chains of sugars and sucrose into its constituent glucose and fructose molecules. By the time the foraging bee reaches the hive, the nectar has less sucrose and more glucose and fructose than it did originally, and is more dilute because of the bee's saliva. In the hive the task is to concentrate nectar to the point that it will resist bacteria and moulds and keep until needed. Microbes normally feed on sugars, but they are killed if the sugar concentration is high enough for osmotic pressure to draw moisture out of their cells. Honey ripening involves both evaporation and the continuing work of bee enzymes.

The disaccharide sucrose is converted almost entirely to glucose and fructose, because a mixture of single unit sugars is more soluble than the equivalent amount of sucrose. Higher concentrations provide a more compact supply of energy and a more effective defence against spoilage. Anti microbial action is also the function of an enzyme that oxidizes glucose to form gluconic acid and peroxides. Gluconic acid lowers the honey's pH, and the peroxides act as an antiseptic. More mysterious are several enzymes that actually synthesize long-chain sugars, some of them very rare, in small quantities. In addition to all this sugar chemistry, ripening honey also undergoes complex changes in colour and flavour. So far, upwards of 200 different substances have been identified in honey, and there are certainly others yet to be discovered.

A Four-way Bee Escape

It's time to harvest your honey, so why not make a simple and very efficient four-way bee escape. The materials you will need ● 1 wire mesh – 150x88 mm ● 2 strips of wood – 150x18x6 mm ● 2 trapezium shaped pieces of wood – 40 to 30x18x6 mm ● 2 springs from such as a Porter bee escape – 45 mm long Assembling the escape

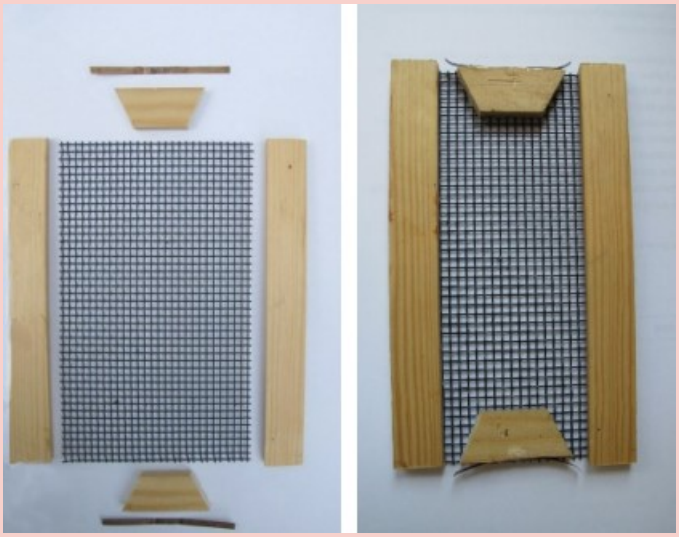
(1) Fix the two strips of wood to both sides of the wire mesh using strong glue such as Araldite and metal staples through the mesh.

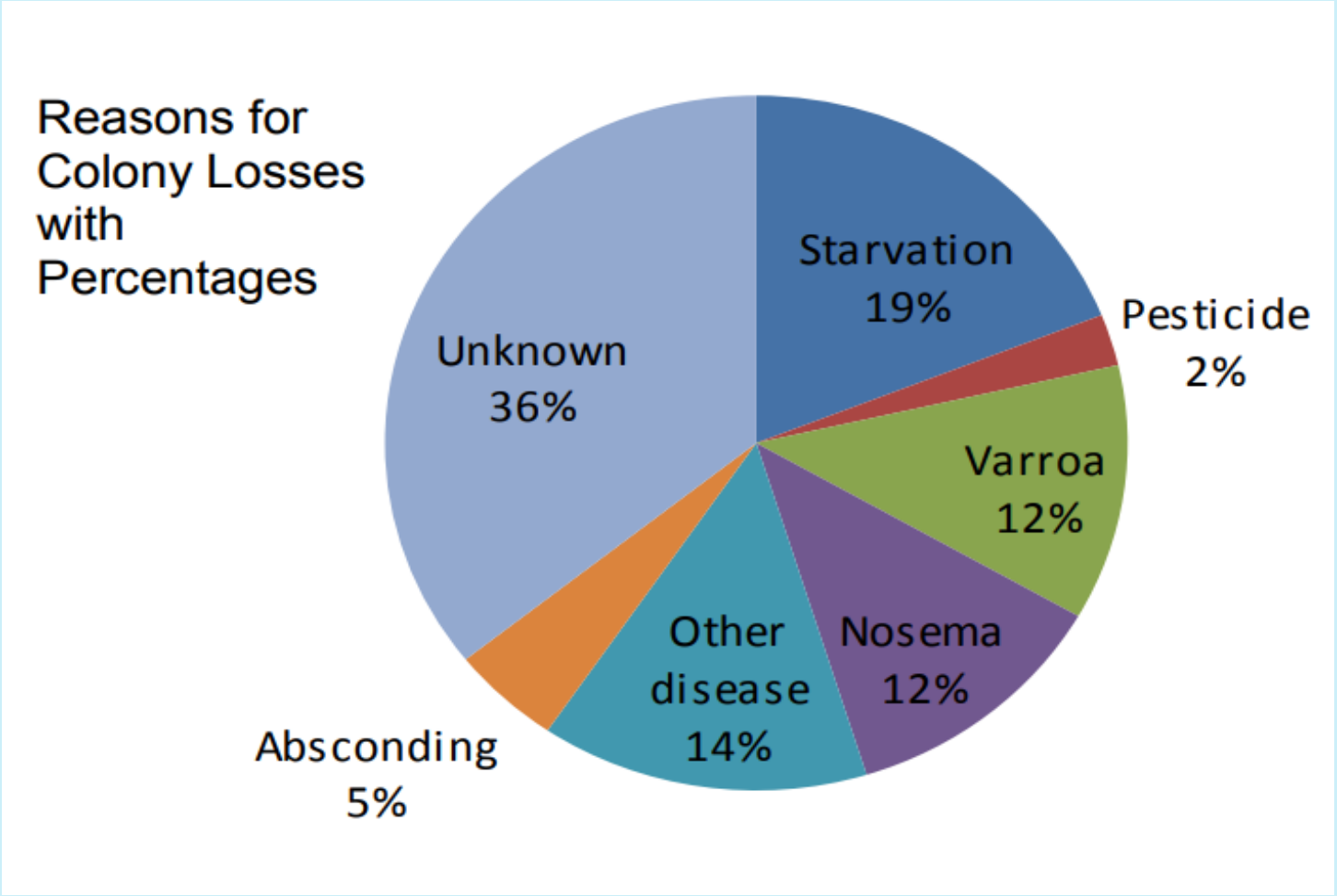
(2) Fix the two trapezium shaped pieces of wood 2 mm off the edge of the wire mesh, and between the wooden strips, leaving a 'bee space' gap of 6 mm.

(3) Glue the springs to the long edge of the trapezium shaped pieces of wood with; hold in place with sticky tape until the glue has set.

(4) When the glue has set, bend the ends of the springs so that they cover half the escape hole. Using the bee escape Place the bee escape, mesh side facing down, on top of the box you want the bees to occupy after clearing.

Put a cover board over so that the bee escape is below the hole in the cover board. (Seal the other hole in the cover board if you have two.) Finally put the super with honey, from which you want to remove the bees, on top of the crown board. The bees should clear it in twelve hours, so next morning you can collect your 'bee free' honey





A Simple Swarm Collection.

Having heard about some very unusual swarming patterns this year with lots of beekeepers reporting a lot of swarming, I was surprised to have had no calls from either the BBKA swarm collectors list or from our local swarm co-ordinator. Many others locally reported no call outs as well. I was pleased then to get a call via the BBKA swarm collectors list about a swarm on a wall just half a mile from home. Not just that but the call came from a beekeeper who thought they were probably from their own hive which they keep in their town garden. They had no room for more bees themselves or the will to try and reunite so just wanted to someone to give them a home.

So I knew they were honey bees (the only other call I'd had this year was from a local builder, it turned out to be Bumbles, harmlessly nesting in an isolated stone wall). The lady told me they were on an accessible wall, at head height and she would happily liaise with the neighbours to let me collect them. I use an old Warre box with nailed on bottom as it fits nicely in the car and holds my "swarm kit" brush, secateurs, old sheet etc and the whole thing took about an hour as once they were in the upturned box the weather got quite drizzly and the bees were all happily inside and sealed with the sheet, without waiting for dusk to fall. I had them hived onto 5 frames on my Isolation apiary and was home in time for tea.

Nosema: the forgotten Parasite

Largely ignored since the arrival of Varroa destructor in 1992, this little protozoan is still very much with us. It was formerly the most common parasite of adult bees, feeding and multiplying in the gut at the expense of its host. This renders infected bees less able to function well, reduces their ability to nurture their young, shortens their lives, and in the queen it renders her less fertile. There are no obvious symptoms. Although dysentery is often associated with nosema, it does not always occur and bees can have dysentery without the presence of nosema.

Spores are spread in faeces and the bees' house-cleaning operations spread the spores. In spring, as cells are cleaned for the brood nest to expand, more young adults contract the problem and the colony fails to build up. Indeed it was often referred to as spring dwindling. Colonies are not normally killed by nosema alone, but the condition renders a colony unproductive. It builds up ON the flow, not FOR the flow, so it could appear to be in a good state of health by late summer, only for the cycle to be repeated the following year.

A sample of at least thirty adult worker bees is needed for a microscopic quantitative diagnosis. I recommend all members who are unable to check their own bees to take part in any association forthcoming Nosema Clinic and maybe increase their honey production next year.

Preparing for the Show

Even when an exhibitor has really fine quality honey there are several reasons why it may not win a prize. It is largely to do with preparation. Careful scrutiny of the schedule and rules are needed. Below are some reasons why good honey fails to win. A study of them and acting accordngly may help you to bring home some prize cards or even a trophy and avoid disappointment. It is advisable to use new jars and lids.

1. The honey has been entered in the wrong class. The division has grading glasses that members may use in making an entry.

2. The honey is in the wrong type of jar with the wrong type of lid.

3. Liquid honey may be dull or have crystals forming in it. It needs warming to dissolve them and brighten the honey.

4. There is insufficient honey in the jar.

5. It has not been finely strained and has foreign particles in it.

6. It has been bottled too soon after extraction and contains fine bubbles which lodge around the neck of the jar and cause scum to form on the surface.

7. In two jar classes you do not have a matching pair. This applies to jar, lid and contents.

8. The jar has finger marks on it. It is sticky and shows traces of a previous label.

9. The lid shows evidence of previous use such as rust marks on the thread.

10. Set honey may move in the jar. Test by lying the jar on its side. honey should not ooze out.

Bees reverse brain aging.

Scientists at Arizona State University have discovered that older honey bees effectively reverse brain aging when they take on nest responsibilities typically handled by much younger bees. While current research on human age-related dementia focuses on potential new drug treatments, researchers say these findings suggest that social interventions may be used to slow or treat age related dementia. In a study published in the scientific journal Experimental Gerontology, a team of scientists from ASU and the Norwegian University of Life Sciences, presented findings that show that tricking older, foraging bees into doing social tasks, inside the nest, causes changes in the molecular struc□ture of their brains. "We knew from previous research that when bees stay in the nest and take care of larvae – the bee babies – they remain mentally competent for as long as we observe them," said Gro Amdam, an associate professor in ASU's School of Life Sciences. "However, after a period of nursing, bees fly out gathering food and begin aging very quickly. After just two weeks, foraging bees have worn wings, hairless bodies, and more importantly, lose brain function – measured as the ability to learn new things. We wanted to find out if there was plasticity in this aging pattern so we asked, 'What would happen if we asked the foraging bees to take care of larval babies again?" During experiments, scientists removed all of the younger nurse bees from the nest - leaving only the queen and babies. When the older, foraging bees returned to the nest, activity diminished for several days. Then some of the old bees returned to foraging, while others cared for the nest and larvae. Researchers discovered that after 10 days, about 50% of the older bees caring for the nest and larvae had significantly improved their ability to learn new things. Amdam's international team discovered a change in proteins in the bees' brains. When comparing the brains of the bees that improved with those that did not, two proteins noticeably changed. They found Prx6, a protein also found in humans that can help protect against dementia – including diseases such as Alzheimer's – and documented "chaperone" protein that protects other proteins from being damaged when brain or other tissues are exposed to cell-level stress. Researchers want to create a drug to help people maintain brain function, which could take up to 30 years of basic research and trials. "Maybe social interventions – changing how you deal with your surroundings – is something we can do to help our brains stay younger," said Amdam. "Since the proteins being researched are the same in bees and humans, they may be able to spontaneously respond to specific social experiences."

Honey, wax, propolis, royal jelly… and dung??? “

The digested pollen needs to be excreted. Bee excretion means releasing a few drops of pale yellow coloured fluid resembling a water drop. It is referred to as bee dung. The bees normally use an area within a radius of 10-30 meters of the hive as a toilet zone. It is estimated that an average colony produces as much as 45-50 kg of bee dung a year, neatly deposited around the hive as highly nitrogenous manure. “When it rains, this dung gets washed into the soil, breaks down and provides an excellent natural fertilizer”.

Garden flowers have evolved velcro-like petal surfaces to help bees in the breeze, a study by Cambridge University has found. Conical cells on the petals allow bees to maintain a foothold while being shaken around.

Bees hold on by locking their claws into gaps between the cells.

A crowd of happy beekeepers.

Migrating honey bees from commercial frames to 14x12s part 1 and part 2 by Andy Sivell

Andy Sivell is a journalist, copy writer and magazine publisher.

He got his first colony and took up beekeeping in 2010. He maintains a blog, Diary of a Nervous Beekeeper, which can be found at www.beekeepingadvice.co.uk

The last few weeks have been wet. Very wet. Nearly five weeks of steady rainfall we've had now, which must have gone some way towards alleviating East Anglia's drought, you'd have thought. Leaving aside the issue as to whether it was the right kind of rain, both the bees and I have pretty much just had to get on with life – which, in the bees' case, they've interpreted literally.

Five weeks ago I snuck a quick peek between cold snaps and found capped brood.

Three weeks ago I nipped in between rain showers and saw eggs, larvae and more sealed brood.

I also initiated step one of a convoluted plan to migrate the colony from commercial frames onto 14x12s. Last weekend I progressed to step two. So here's my plan: my one and only colony spent the winter housed on eleven commercial (10") frames, inside a commercial brood chamber. The commercial brood chamber doesn't belong to me, so needs to be returned to its owner.

When I decided to build my own hives I elected to go for national 14×12 brood chambers because they're the most commonly used in these parts (we live next to fields of oil seed rape). National 14×12 frames will only fit into a commercial brood box with an eke fitted. Commercial frames will not fit into a national brood box of any description (standard or 14×12 deep).

National frames will of course fit both a commercial and a 14×12 brood box, but they're too short and will encourage brace comb. With me so far? Good. Because this is where it gets really complicated… Apart from commercials, the only frames I have with drawn foundation are five (actually four and a bit) national frames (DN5s).

All my 14×12 frames are brand new and therefore only have undrawn foundation. I live in an area where, as mentioned, the local oil seed rape normally produces an early crop of honey – which hardens within the frames if it's not harvested promptly. And I've never had so much as a single jar of honey from my bees since I took up beekeeping, er… two years ago.

No pressure there then. So my challenge is to migrate the bees from commercial frames to 14x12s, via a short stopover on nationals, without weakening the colony so much that they won't produce an early harvest.

A bit like getting a fox, a chicken and a sack of corn across a river in a small boat without any of them getting eaten. In this regard I've had some help from Deryck Johnson, who's forgotten more about beekeeping than I'll ever know.

Together, we discussed the merits or otherwise of a shook swarm (essentially, tipping the bees from the commercial brood chamber into the 14×12) before rejecting the idea on grounds that, with so much undrawn foundation, the new colony could be weakened too much to produce any honey.

Had that not been the case it would also have been an effective method of disease control. Instead, we elected to go for the world's most complicated 12-step plan, involving spending a month or two carefully moving the commercial frames outwards from the centre and my few national frames, followed by 14x12s, inwards from the edge. And adding a homemade eke, and a super.

And perhaps starting another, separate colony around the corner. I can't see what could possibly go wrong. I love to browse beekeeping books. I confess I don't own that many: two, to be precise.

But I like to browse, or 'to look at the pictures' (as my sister once rudely described my reading habits). My problem with actually buying books is that I have no time to read them, and that I suspect the bees never get around to it either.

Anyone coming here from 'Migrating honey bees from commercial frames to 14x12s – part one' with the not unreasonable expectation that 'part two' might – you know – progress from there, ought to brace themselves now. I had a plan, an elaborate twelve-point plan, which I'd even begun to render into a series of beautiful colour illustrations.

Unfortunately, (or possibly fortunately) the bees had a different agenda. Shop-bought super (below) versus homemade super (above). After taking this picture I went out and bought three supers. (see photo back page) At my next inspection I found drone brood and over a dozen unsealed queen cells, the unmistakeable signs that the colony was preparing to swarm.

The presence of queen cells was obviously a dead give-away, but I was quite proud of the fact that having noticed more than the average volume of drone brood on the outer frames I was already on the look-out for queen cells before I found them. And what was this in the super above? Honey. Honest to goodness honey.

Two years of trying and approximately £400 in equipment and granulated sugar was about to pay off and result in my first jar of golden nectar: retail price £4. I called Deryck Johnson for advice and, bless him, he came over the very next day. I don't think I could have kept him away.

I thought we'd split the colony, but what we ended up doing was an artificial swarm. I say "we". Deryck did all the work. I stumbled around knocking into things. I could finally see what he'd meant about my apiary being small. With two of us it was like working in a broom cupboard. I proudly showed him the new apiary site I'd prepared around the corner.

Why might bees die in the winter?

Every winter beekeepers lose some of their bees; often it's difficult to be sure why. Possible reasons are: 1. Shortage of food! Give each colony 15kg of sugar. Ideally, give them 20kg. Will the food be stolen by wasps or robbed by other bees as last autumn? Fit entrance blocks before you extract honey and start feeding. Might the bees move away from stores in the hive and be unable to get back to food in very cold weather, starving in the midst of plenty? Use a double brood or a brood and super without a queen excluder. If the super is below the brood chamber, the bees will use any stores in it first. 2. Varroa! It is now recommended that thymol based treatments like Apiguard should be used in early August. Thymol seems to work well in some colonies but less well in others. I recommend using oxalic acid around Christmas-time. Please give oxalic acid a go – it is less poisonous than thymol. 3. Nosema! There are two types of nosema: Nosema apis and Nosema ceranae. Nosema increase may be linked to Varroa. Nosema ceranae may have been introduced by Varroa from the Asian honey bee Apis cerana. The bug is now thought to be a fungus. Infections can sometimes be recognised by faecal slicks on hive fronts or on comb but only a microscopic examination gives a positive identification. Treat bees with Fumadil (or Fumagillin), if you can get it, and sterilise old frames with 80% acetic acid to kill the spores. To minimise infection, replace comb three years old or older. 4. Queenless! If your queen has failed to mate, has mated badly or died from old age, your colony cannot survive and in the winter colonies cannot requeen themselves. In the autumn, some colonies try to requeen themselves by supercedure. Let them get on with it and do not remove 'odd' queen cells in August or September. Bees do not normally swarm after July. I never inspect the brood chamber after I have fed the bees. Bees may be killed by woodpecker damage to hives, by roofs blowing off or by vandals. I fit plastic strips around every hive. My demo WBC has a strap round it in the winter and I check the hives after storms. They are otherwise left alone. In well fed, disease free, queenright colonies they can survive really cold weather - mine thrive with open mesh floors, without an inspection tray in place. Improved ventilation and cold bottoms appear to help wintering. Last winter, I believe, losses were around 16% nationally

Cooks' Corner -

Two Fat Ladies' Honey Cake By Rose Prince in the Weekend Telegraph,

Ingredients 115 g/4 oz butter at room temperature + extra for greasing the tin 55 g/2 oz dark soft brown sugar 6 eggs, separated, then yolks lightly beaten 150 ml/5½ oz runny honey 125 g/4½ oz self raising flour Pinch of salt 1 tsp ground cinnamon 1 tsp mixed spices 100 g/3½ oz ground almonds 100 g/3½ oz chopped walnuts

Heat the oven to 170°C/325°F/Gas 3 Grease a 20cm round or loaf tin with butter (or line with parchment). Put butter & sugar together in a bowl and beat until pale & creamy. Gradually beat in the egg yolks adding a little at a time. Add honey. Sift flour, salt and spices together and fold into the mixture with the almonds and walnuts. [Folding can be done by dipping a large balloon whisk by hand through the mixture - this retains its airiness.] Finally, whisk the egg whites until stiff and fold into the mixture. Bake for about one hour. It is cooked when an inserted skewer comes out clean. Due to the nuts, the cake will be level or slightly sunken. Eat spread with butter or on its own. Should keep a fortnight in a tin. Not usually iced - but fudge icing & walnuts would be good. Try adding 2 small mashed bananas or grated courgette with the nuts.

Discovered in Mell Square, Solihull (hopefully before someone sat on it)! Photo was sent to Solihull Branch Secretary by the Deputy Manager of Mell Square, Brian Walker, when asking for help to remove it. If anyone has any other funny or unusual photos of swarms, please send them in! Should be plenty to choose from this year! Ed.

BEE KEEPERS' QUARTERLY.

The Bee Keepers' Quarterly published by Northern Bee Books is a somewhat weightier magazine that BeeCraft.

It carries articles on research; articles from bee keepers from around the world, (the editor lives and keeps bees in Messinias in Greece); articles on bee health; bee keeping development; the bee keeping season and much more besides.

Recent features have included colony losses; making a 'Langstroth' top bar hive; overwintering; new technology; Travellers' Tales and articles 'for the workshop', and there always a number of book reviews.

The normal cost is £28.00 pa, but through the Association it is just £18.00pa.

It needs a minimum of six subscribers for us to take advantage of the offer and John McKee, our Treasurer has kindly offered to facilitate it on our behalf.

So, send a cheque to John McKee at 27 Egmont Drive, Avon Castle, Ringwood. BH24 2BN along with the address to which you would like the magazine delivered and BKQ will wing its way to your door every three months.

Those who join and are already paying full subscription will a refund on their unused existing full price sub.

£18.00 per year is only 34 pence per week and the magazine is well worth it.

If anyone would like to read a few back copies to see what it is like, you can contact me through the web site or at BADS-BKA@gmail.com.

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Himalayan Honey Hunter coming home with his crop

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UK Honey Labelling Regulations

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

1. The Word "HONEY" is required.

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

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

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

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

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

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

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

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