Beetalk March 2025

General info and news about bees

Hello and welcome.

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

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

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

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

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

Hope you enjoy.

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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PLEASE SUPPORT THE FOLLOWING.

NORTHERN BEE BOOKS

OVER THE PAST TWENTY YEARS OR SO WE BEEKEEPERS HAVE HAD TREMENDOUS SUPPORT FROM NORTHERN BEE BOOKS. WE WOULD LIKE TO THANK THEM BY PUBLICISING THEIR WEBSITE WWW.BEEDATA.COM

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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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HONEYBEES UNDER THREAT FROM BUMBLEBEES.

Stricter controls over bumblebee imports to the UK are urgently required to prevent diseases spreading to native bumblebees and honeybees, scientists have warned. The call follows the discovery of parasites in over three-quarters of imported bumblebee colonies they tested.

Whilst wild species of bees and other insects pollinate many crops, commercially-reared and imported bumblebees are essential for pollination of greenhouse crops such as tomatoes. They are also used to enhance pollination of other food crops such as strawberries, and are now marketed for use in people's gardens. The trade is large and widespread: 40-50,000 commercially-produced bumblebee colonies – each containing up to 100 worker bees – are imported annually to the UK.

Researchers from the universities of Leeds, Stirling and Sussex bought 48 colonies of buff-tailed bumblebees (Bombus terrestris) from three European producers. All were meant to be disease-free, but when they were tested using DNA technology, 77% of the colonies were found to be carrying parasites. Parasites were also found in the pollen food supplied with the bees.

Screening revealed that the imported bumblebee colonies carried a range of parasites including three honeybee parasites (Nosema apis, Ascosphaera apis and Paenibacillus larvae), and two parasites which infect both bumblebees and honeybees (Nosema ceranae and deformed wing virus). After the screening tests, the team conducted a series of carefully controlled laboratory experiments to find out whether the parasites carried by the commercially-produced bumblebee colonies were viable and able to infect other bees.

The results suggest current regulations and protocols governing bumblebee imports are not effective. Currently, Natural England licences are only required for non-native subspecies. Although the licences require colonies to be disease free, colonies arriving in the UK are not screened to ensure compliance and the regulations do not apply to imports of the native subspecies.

The study argues that producers need to improve disease screening and develop a parasite-free diet for their bees, while regulatory authorities need to strengthen measures to prevent importation of parasite-carrying bumblebee colonies, including checking bees on arrival in the UK and extending regulations to cover imported colonies of the native subspecies.

As well as increasing the prevalence of parasites in wild bumblebees and managed honeybees near farms using the commercially-produced bumblebees, continuing to import bumblebee colonies that carry parasites is also likely to introduce new species or strains of parasites into some areas, the authors warn.

SNELGROVE AND HIS BOARD

I went to change my library books at a recent "social" meeting of Nottingham Region. On looking for something I might read there was 'Snelgrove - Second Edition 1935 in this monograph published privately with the encouragement of his friends'. I scanned it and sat down in the audience since the convenor had started to introduce a presentation and guess what? "SNELGOVE"! Alex Thompson delivered his subject with enthusiasm and a degree of communication which is rarely found these days. The result was that I understood for the first time the theory and practice of this art. Alec referred to the Barnsley Beekeepers' website and there later that evening on the print off was a timetable with flexibility, Bob Logan allayed everyone's fears about the cost of such a board as you can make it yourself! So I read the book, viewed the Barnsley Beekeepers' website, printed it off and found a spare crown board in my shed. Within an hour I had the structure made and all that was needed was some wire gauze to cover the feed holes. (B&Q - well what a price!) So I talked my way into some off cuts and so in business.

I had just the hive in mind for my prophylactic treatment and good weather arrived. The closest neighbours had gone on their long holiday and those on the other side off to Chatsworth for the day. Find the Queen! Well, this had been a swarm and the queen had been seen but not marked. However, to be sure, I had her on the comb in the new brood chamber on a swarm board in front of the hive just as Snelgrove advised. I then rebuilt the hive without the board and put the original board on top and left it for three days as Snelgrove says. At three days I put the board below the original board chamber (now on top) and opened up the first of the gates and then followed the sequence. There were no queen cells anyway so this was prevention and I did not want to make an increase.

Many thanks to the social evening, the unbelievable lucidity of Alec, the librarian, and the encouragement of the DIY secretary! The message – come to the meetings and read the books.

UNITING COLONIES

Swarm controls will have resulted in an increase in numbers. Getting back to the number you thought of first is simple: put two colonies together but do it carefully. The accepted way to unite two colonies is using a sheet of newspaper. The books will tell you to move the colonies close together, moving one of them a yard at a time each day, but my experience is that this is unnecessary. Simply wait until the bees have stopped flying in the evening, remove the crown board from one hive and lay a sheet of newspaper directly over all the frames of the brood box, (use a broadsheet not a tabloid) then place the second colony over the top of the newspaper. You can make a few holes in the paper but I never do.

Close up and leave for a week before inspecting and reassembling into one unit. If there are supers, ensure that there is a sheet of newspaper wherever adjacent boxes contain different bees. A few precautions - loosen all hive parts and take any brace comb off the bottom of the frames of the top box beforehand, preferably earlier in the day. At the same time remove the queen you do not wish to keep. Put a queen excluder on top of the newspaper so that the queen is confined in one box and also to hold down the newspaper. I find a fine water spray will keep the bees in the bottom box immobilised for the short time they are exposed.

DIFFERENCES BETWEEN SUMMER AND WINTER BEES

A 'winter' bee is produced at the end of the summer. They emerge into a very different world to those bees in other seasons. There is little or no brood to feed and there are plenty of provisions. Consequently the young bees feed on pollen for several weeks. Probably for this reason, unlike ordinary summer worker bees, winter bees have enlarged fat bodies with many globules of protein and enlarged hypopharyngeal glands. This improved diet may also contribute to their extended life span compared to summer bees.

The trigger colonies use to switch from summer to winter bee production is unknown, but a leading hypothesis is that it is simply the cessation of brood rearing in the autumn. Nursing, after all, is hard work and the bees born into a nest with no nursing jobs have it easy and live longer. Although the verdict on the trigger is still out, it is clear that winter bees differ physically.

Some of the key differences between winter worker bees and summer bees are: -

- o Winter bees will live much longer (four to six months) than a summer bee (45 days), probably due to less foraging and working. Free of maintaining incubation temperatures needed for brood rearing (32-36ºC), the core bees lower their heat production and thus minimize their consumption of honey.
- o Winter bees have fatter bodies on which they rely for nourishment during the non-foraging month, with greater dry weight, protein, fat, triglycerides, glycogen and glucose content.
- o Winter bees have significantly reduced metabolism, compared to summer bees at the same temperature.
- o Winter bees have a different haemolymph (blood) protein profile, with high levels of vitellogenin, which is a potent antioxidant that protects the brain from oxidative cell damage. This protein is also used for producing brood food and protects bees from oxidative cellular damage. The maintenance of immune functions due to this protein may also contribute to behavioural and physiological differences in stress resistant winter bees compared to summer bees.
- o Winter bees have delayed degeneration of their hypopharyngeal glands compared to summer bees, and delayed increases in juvenile hormone, which is an initiator of foraging behaviour at high concentrations.
- o The transition from in-nest behaviour to foraging is delayed by several months in winter bees.
- o Winter bees have stronger memory of foraging patterns due to less foraging activity; they can remember a food source from the previous autumn for a period of 173 days.

WHY WOULD ANYONE WANT TO KEEP BEES?

his is a legitimate but troubling question. Keeping bees productively is not as easy as it once was. In fact, at times, keeping bees productively is positively difficult to do. Today's long-term beekeepers are more educated, informed, and dedicated than beekeepers past. They have to be or their colonies will succumb to any number of present-day exotic maladies. The evolving answer to the rhetorical question, "Why would anyone what to keep bees?" is simply, "Well, someone has to do it."

For the foreseeable future, honeybees will not be able to thrive without human help. The bee industry—both hobby and commercial—provides a fundamental service to society, but beekeepers and their bees only get token credit for this critical service. Pollinated fruits and vegetables have always been available and will always be available seems to be the logic. For example, every seed in every cucumber, watermelon, squash, okra, berry, apple, plum, or pear is the end result of some kind of bee quietly working—unintentionally— for us to have a diversity of foods.

Even if we import our food, beekeepers and bees somewhere must meet pollination needs. Society truly can't imagine life without bees any more than it can imagine life without water or air. As beekeepers, I hope you take pride in the contribution you and your bees make to the food diversity of our society. Beekeeping is clearly more difficult than it ever has been, but it is also clearly more important now. Fewer and fewer beekeepers and fewer and fewer bees—of all species—are carrying an ever-increasing responsibility. Keeping bees—it's a good thing you do.

TANGING THE BEES

Tanging" or "ringing" is an old practice to bring down a swarm of bees in flight by beating metal objects together such as pots, pans, and implements. The items varied, but one reference stated that a copper pot was best. The sound made was either a rhythmic beat or just a clankering racket by one or several people. Tanging has been closely associated with "drumming" – the banging/thumping on drums, hive boxes, or hollow logs to attract bees into a hive.

The origin of tanging has its roots in Greek mythology. To protect the infant Zeus from his father's (Cronus) discovery, the Curetes clashed their metal shields to cover the baby's crying. This brought swarms to the cave and provided nourishment to the baby.

In the past, beekeepers tanged to alert their neighbours as to their claim, right, and ownership of a swarm. This allowed you to legally trespass on your neighbour's property to follow and hive the bees. Today we hear stories of grandfathers bringing down swarms directly to a hive box or hollow logs by tanging and an occasional modern beekeeper trying to test the validity of the myth.

Does tanging work? Many believe that swarms settle in a short period of time regardless of whether someone is banging on a pot or not. If you are following a swarm and are tanging, then, by coincidence, you will be there when they settle and this may reinforce your opinion that tanging works. Some believe that, although bees cannot hear, they can sense the vibration caused by tanging. This vibration may cause loss of communication within the swarm or with the queen and thus causing the swarm to settle.

Tanging is folklore and is not part of modern day beekeeping, but when you see your hive start to swarm, banging a pot may ease your feeling of helplessness (and alert your neighbours).

ALTERNATIVE NATURAL MOTH REPELLENT

ix a cup sugar + 1/2 cup vinegar + a cup water and add one fresh banana peel. Cut top third of an empty 2L plastic pop bottle off and remove cap. Pour liquid and peel into bottom of the bottle. Invert the top so that the cap end is inside the bottle, but above the liquid and clip in place. Place one or two of these concoctions in your honey super storage room to attract and trap wax moths.

(**Be aware that this is a classic method of attracting fruit flies (Drosophila sp.) for genetic experiments Ed.)**

TAKING YOUR BEES TO THE VET!

n article in the journal of the Royal College of Veterinary Surgeons discussed the growing threat to honeybees, and our need for more weapons in our armoury against Varroa. In particular the article mentions the agreement between the VMD (Veterinary Medicines Directorate) and "beekeeper representatives" that treatments which are available on the continent of Europe should be made available here. Apparently the VMD plans to develop a "Suitably Qualified Person" (SQP) qualification for beekeepers to enable them to prescribe appropriate medicinal products. (The frightening bit is when the article discusses the role of the Vet in all this.) Guidance to vets "confirms that veterinary surgeons may apply for Special Import Certificates or Special Treatment Certificates on behalf of beekeepers, and prescribe medicines for the bees. It also addresses the issue of when bees can be considered "under the care" of the veterinary surgeon, in order for them to prescribe the medication. In the current circumstances, and in light of the urgent need for treatments, the Committee has stated that it may not be necessary for the veterinary surgeon to visit the beehives before prescribing, as would normally be the case. The veterinary surgeon must still, however, "take professional responsibility for the prescriptions, maintain appropriate clinical records and comply with the responsibilities for the supply of medicines."

The idea of taking your bees to the vet sounds like a good joke, until you realise that these people are serious! I have nothing but respect for vets, but most of them know nothing about bees. The prospect of my having to educate a vet about bees in order to get a prescription from him/her, and then paying vet's fees for the privilege is a nightmare. I can hardly think of anything that would set back our fight for bee health more effectively. We can only hope that the BBKA will be able to get someone to see sense before this sort of thing becomes law.

DRY SUGAR METHOD

When we suspect that winter stores are not sufficient to keep a colony alive, there are many ways we can supplement our bees from within the hive.

An empty comb that has been filled with syrup or a frame feeder can be placed next to the cluster (never break the winter cluster), a pail feeder can be placed within a super above the inner cover, or bags of syrup can be laid atop the frames. These are only a few ways to feed syrup. Every beekeeper has his or her own favourite method. Unfortunately, when winter temperatures fall below 100C bees will not take in the syrup and a different method must be used.

One low temperature method of feeding is the Dry Sugar Method. It is best to do it on a warmer day, one when the bees are flying, but in an emergency you don't have to wait, just so long as you can get in and out quickly and without disturbing the cluster!

For each hive that you are supplementing, you will need an extra super or hive body, a sheet of newspaper, and three to five pounds of regular table sugar. A spray bottle filled with syrup and 'Honey B Healthy' (?) are helpful also but not absolutely necessary. Have everything needed next to the hive so no time is wasted and the hive will be open as short a period as possible.

Remove the hive top and inner cover, set the empty super or hive body atop the hive. Place the sheet of newspaper within the super in such a way that it rests on top of the frames and comes up on the sides and back but leaves a gap of an inch or so uncovered at the front of the hive.

Pour the sugar onto the newspaper, heaping it toward the back of the hive so that it does not flow down into the occupied portion of the hive.
Spritz (sic) lightly with syrup containing 'Honey B Healthy'. This sets a thin crust on the sugar and provides the bees an irresistible attractant to lure them up into the sugar chamber. Replace the inner cover and hive top. It is that simple!

Do not be alarmed if you see sugar at the front entrance over the next few weeks. The housekeeper bees usually do carry a portion of the sugar out of the hive. This is one disadvantage of feeding this way.
Come spring you will also have to discard any leftover sugar before you can reverse boxes, make an inspection, or add honey supers, and residual sugar can attract ants.
In my opinion, if this method of feeding can provide the colony with enough food to survive the winter then it is worth a little extra mess to clean up.

The Dry Sugar Method also provides the added benefit of moisture absorption, in our humid climate there is always extra moisture in the air, and dampness is our bees biggest enemy, next to starvation. As the bees respire, the moisture rises and is absorbed by the dry sugar instead of condensing on the inner cover and dripping down on the cluster. Additionally, we have added an extra chamber on top of the colony, this sugar filled chamber acts as a buffer zone, much as the attics of our own houses, any moisture that forms on the cold inner cover drips down on the sugar not the bees. Whether it is night or day, raining or sunny, so long as bees are able to leave the cluster, they can feed on the dry or damp sugar in the upper chamber.
This method can also be used as part of your winterisation preparations at the end of autumn instead of solely as emergency rationing.

IS IT RECOMMENDED TO PUT A SUPER AT THE BOTTOM OF THE HIVE DURING WINTER?

This is recommended practice by some experienced beekeepers. However, others suggest it may cause problems.

These are comments received from Dennis Chow an experienced beekeeper in Sussex. “About ten years ago upon the advice of other beekeepers in my club I tried the system of leaving the super box under the brood box, the reverse way to a normal brood and half system. In theory this is very logical because in the Spring we always found the queen laying in the top super box. By changing it over, we should have more room for the queen to lay and consequently more bees to produce the early crop. I was totally happy with the idea and changed all my four hives at the Buchan Park to the new system, but didn't change my other three colonies at the Handcross site.

However, when I visited my bees in the Spring, I was very sad to see the three colonies at Buchan Park had died, but there was plenty of food untouched in the super box (below the brood box). Because the bees had not died of diseases, I just couldn't understand why. I felt lucky that I had not changed the hives at the Handcross site and these bees were fine. After thinking about the problem for a while, I came up with a theory that by changing the brood and half system to the reverse way this may have caused cold temperature problems in the hive.

During the cold days the bees had clustered as normal in the brood box (on top), and the super box at the bottom got very cold which caused the stores to solidify, so the bees were unable to use these stores. Whereas, in the normal way, the bees cluster in the brood box at the bottom and their heat rises to keep the super box of stores warm and fluid so that the bees are able to use these stores. Then when the bees have finished all the stores in the bottom brood box they move up to the super box in the Spring.
However, I discovered that no one had lost any bees because of changing over the system in a WBC hive. Was this because a WBC hive is double walled and consequently unlike the National hive provides better insulation to keep the stores in the super box at the bottom sufficiently warm I wonder? For me it was a very bad experience and I decided to keep my brood and half system the normal way. Since then I have never lost a single hive in any hard Winter.”

Perhaps the lessons are that it is beneficial to place a super box beneath the brood box during Winter because this provides improved insulation from the cold floor. But any stores are better placed above the brood box so that they do not cool and prevent the bees from using them.
With the predictions of a very cold Winter to come this year it may be wise to consider the temperatures within our hives, and ensure that we have an appropriate set up of stores and insulation, both from the cold floor and at the roof to prevent heat loss.

Perhaps the optimum set up is; insulation above the crown board to prevent heat loss, a super with stores above the brood box plus a super beneath the brood box to insulate the bees from a cold and draughty floor.

Recipe (35) Honey Buscuits

1 tablespoon ***Honey***
8 ounces Plain Flour
3 ounces Castor Sugar
5 ounces Butter

Prepare a greased baking sheet.
Set the oven to 180°C or Gas Mark 4.
Cream together the butter and sugar.
Stir in flour and honey and mix together to form a smooth dough. Roll out on a floured board and cut into shapes.
Bake for about 10 minutes until light golden brown. Transfer carefully to a cooling rack to harden.

QUEEN CLIPPING WITH A DIFFERENCE

From the introduction of Italian bees into America perhaps in 1860, beekeepers have sought ways to keep the strain, as stated at the time "pure". Quotes from an article published in 1897:
"The beginner who gets a colony of Italian bees is often puzzled to find that within a ear or so, the bright yellow rings have largely disappeared from the workers, and some of the bees are entirely black."
"So it happens that one who has a colony of full blood Italians in a, locality where black bees prevail, is almost sure to find upon the change of queens that his bees are a cross between Italian and blacks, or, as they are commonly called, hybrids.."

"On the other hand, his neighbour, who has nothing but black bees, will be surprised to find in some of his hives bees that have yellow stripes, the drones from the Italian colony having met the young queens of the black colony."

AL Aspinwall, in 'Beekeepers' Review', gives a plan whereby he thinks he has succeeded in getting the majority of his young queens mated in or near his own apiary. He cut off a sixteenth of an inch from the wings of his young queens and by this means made it more difficult for them to fly far away. Some of the queens had an eighth of an inch taken from the wings on each side, and these were equally a success.

Hive Roles (1) - 'Undertaker Bees'

It's a dirty job and only about 1% do it at any one time. But middle-aged honeybees that serve as undertakers, removing dead bees from the hive, appear to be a distinct cadre of workers that are developmentally ahead of their peers. In this social world known for its division of labour, there also were unexpected discoveries by researchers. 'Undertakers' don't get better with experience, and they don't do well working together. The findings are detailed in papers by Gene Robinson, University of Illinois entomologist, and Stephen Trumbo, a professor at the University of Connecticut. The study on development, also written by entomologist Zhi-Yong Huang, appears in 'Behavioural Ecology and Sociobiology'. The work - which involved identifying the 'undertakers', marking them with tiny, coloured and numbered plastic tags, and following them closely through middle age - provides the first close look at 'undertakers'. Since bees' nests are built in cavities, such a specialty is important for keeping the nests clean. 'Undertakers' had very similar activity levels as other bees, they just do a little bit less of the other middle-aged tasks, like building the comb and storing food brought in by older foragers. They also remove debris, which fits in nicely with undertaking. 'Undertakers' also develop slightly faster than other middle-aged bees, moving on to foraging before the food storers and hive builders. Middle age lasts about 10 days. 'Undertakers' usually removed dead bees for a day or two, but "one extraordinary bee remained at the task for thirteen days," comments Trumbo. 'Undertakers' respond to the odour of the dead, locating the bodies and carrying them out of the hive for 50-100 metres before dropping them. The researchers also monitored how swiftly 'undertakers' worked. "We didn't find any evidence for learning for this particular task," Trumbo said. "This rules out one of the major hypotheses that has been put forward for middle-aged specialisation: That social insects will get better and better at what they do." Previous research had shown that learning is important for the older foragers, who get more efficient as they learn what flowers are producing nectar at what time. Not only did undertakers not improve in efficiency they also got in each other's way and slowed their efficiency. Robinson had shown previously that some bees are genetically inclined to be 'undertakers'. He says "We're beginning to get a clearer picture of the behavioural profiles of interesting types of specialist bees, such as 'undertakers', Understanding the career choices of bees is a useful model for understanding behaviour in general. This new information should enable us to develop new hypotheses about how neurons and genes in the brain function to produce the marvellously complex behaviour seen in honeybee society." Honeybees acquire different job descriptions as they age. Normally, it takes about three weeks for a baby bee to mature into a forager. Undertaker bees are usually around fourteen days old, in the transition from nursing to foraging.

HIVE CLEANING – AN ESSENTIAL WINTER ACTIVITY

The organic acids, Oxalic Acid, Formic Acid, and Lactic Acid are NOT LICENSED for use in the United Kingdom as treatments for bees for Varroa control. No mention of any of the alternatives to the approved product or their method of use should be taken as an endorsement or recommendation to treat. The dribble or trickle method referred to for oxalic acid is commonly used in the UK and throughout Europe, and should you decide to use it you should ensure that you apply it in a safe and informed manner. This short article is something that
has been put together from reading about oxalic acid, listening to the experiences of others and also from my own experience of using it in my hives for the last few years.

Firstly we have to remember that Oxalic acid is a dangerous chemical and should be treated with care. When mixing solutions gloves, goggles, overalls and ideally a breathing mask should be worn. Some methods are more dangerous than others and will be mentioned briefly below. Secondly we need to remember why we are using it. Legally in the UK, as far as the Veterinary Medicines Directive is concerned, it is just used as a hive cleanser. Whilst doing this in beehives, as we all know, it has the side effect of killing off Varroa mites. General understanding is that it does this by burning the mouthparts, feet and other parts of the carapace so damaging the mite that it can no longer function. The acid treatment has greatest efficacy when the colony is broodless as the acid does not get into sealed brood and so cannot kill off any mites reproducing there. Having said that, with a small area of brood in the colony it will still have a reasonable effect on the mite population. Hence the best time for treatment is usually recommended as December and the first half of January. There are three ways of treating with Oxalic acid:

1 Spraying, where the Oxalic acid crystals are mixed with water and applied to the face of the frames and bees using a hand-held sprayer like those used for indoor plants. The disadvantages of this method are the great disturbance to the bees and also, as the solution is just water and acid, it does not stick to the bees very well.

2 Sublimation where the Oxalic acid crystals are heated on a small tray or in an open-ended pipe and the gases permeate through the hive. With this method the hive has to be sealed (no open mesh floor or holes in the crown board) with foam or something similar along the entrance to stop the gases escaping. Also inhalation by humans of the gas is very dangerous. Getting this application correct and carrying it out safely is very difficult and is not recommended for the average beekeeper.

3 Mixing the crystals with a sugar solution and applying it using the trickle method. This means using a syringe or some other small applicator with a measured quantity of solution and dribbling 5ml per seam of bees (a seam is the gap between two brood frames where you can see the bees clustering). About 30-40 ml is needed for most colonies, as this would be sufficient for six to eight full seams of bees in a National hive. Adjustments need to be made for other frame sizes. As this is a sugar solution it sticks to the bees and is
spread around more effectively and affects more mites.

Most hobbyist beekeepers tend to buy in the Oxalic acid in a pre-mixed sugar solution that is ready to apply. This is not very expensive but the downside is that we do not know how long ago it was made. Marion Ellis from the US related at the Somerset special lecture in 2007 that the HMF (Hydroxymethylfurfural, previously known as hydroxymethylfurfuraldehyde) level in the solution increases over time and so should not be stored. The general recommendation is to make up the solution with sugar and use it immediately or store in the fridge for up to one month. With just a water and acid solution no HMF can be formed (it requires a reaction between the acid and the sugar) so the solution can be kept for a long time like this and sugar added when required. It is not difficult to make up the solution and this can be done when needed using the following proportions, which give a 3.5% treatment: - 1:1 Water to Sugar (weight to volume) made into 1 litre of syrup Oxalic acid crystals 35 g

Mix up the syrup first with hot water to dissolve the sugar more easily, allow it to cool and then weigh the oxalic crystals on electronic kitchen scales and add them to the syrup. If you put it all in a large bottle with a lid and give it a good shake it should all mix nicely and be contained and so safer. When you make up a larger quantity like this the margin of error when weighing the oxalic acid becomes smaller (2g out of 3.5g is more than a 50% increase in the dose whereas 2g out of 35g is only about 6% out of the dose). Once made, this solution can be stored in the fridge and what is needed for treatment can be decanted into a smaller bottle. Warming this like a babies milk bottle by standing it in a jug of hot water - before treating the bees will mean they will not be so chilled and fewer bees will die. Like all treatments it is a good idea to carry them out at the same time as your neighbouring beekeepers.

Perhaps next year your local association could have an early December meeting when all members wishing to use it collect pre-mixed Oxalic acid solution. Old plastic milk bottles are perfectly adequate for carrying the made up treatment (please label them clearly) and the cost is minimal as enough crystals and sugar can be bought for less than £20 to treat 150 colonies. This should appeal to the thrifty nature of all beekeepers! Syringes can be obtained via the Internet or from local farm suppliers.

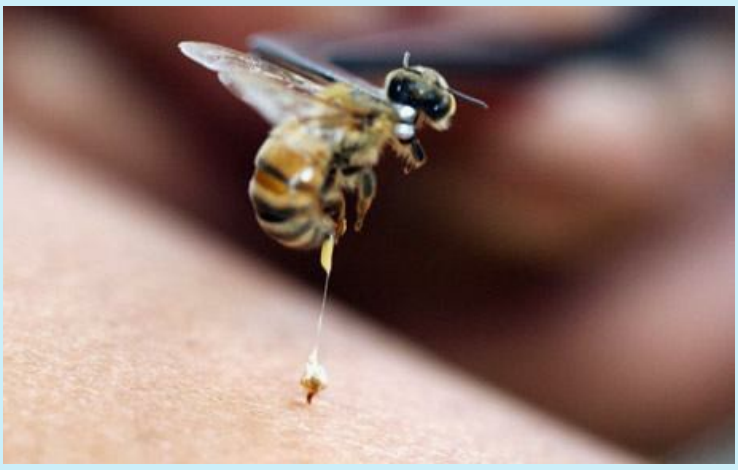
ASK THE EXPERTS

Question. Do the possible benefits of uniting a weak colony with a strong one ever outweigh the potential disadvantages?

Answer 1. I think its important to have a clear idea of what you are trying to achieve when uniting colonies. Ask yourself 'what are the benefits?' If you have two weak colonies going into the winter by selecting the better queen and uniting the colonies you may get one decent colony through to the spring; its a better bet than hoping two weak ones will survive. If you have a strong colony and a weak one, it's a different matter. There is little benefit to the strong colony as it is likely to survive perfectly well anyway; as for the weak one - what are you saving? A few bees and not much more. If you have not clearly identified the reasons why the colony is weak you are probably passing its problems on to a strong colony. I would not take the risk. If you want to try and save the weak colony you would do better to make sure that Varroa is under control, check a few bees for Nosema, ensure it is well supplied, then give it the best conditions you can manage and hope it pulls through.

Answer 2. The most usual reason for a colony being small is that it has failed to requeen after swarming or has a drone-laying queen. The small size is usually due to it having been in this state for some time and therefore, because there has been no brood during this period, all the worker bees will be old. You will not be doing the receiving colony any favours by giving it a present of a bunch of OAPs! It may seem harsh just to let such a colony die-out but it is the pragmatic solution. However, when you leave a colony to die-out, it will eventually be subject to robbing and any surviving Varroa mites will hitch a lift on the robbers who will take them home. It is, therefore, always a good idea to give such a colony a quick oxalic acid treatment to get rid of the Varroa before leaving it to die – or, probably better, shaking the bees off the combs and removing the hive.
There is another perspective to uniting. If a small colony has a perfectly good laying queen and is small for some other valid reason, ie. it originated from a small cast swarm that has not yet had time to build-up, it may be better to try and save it. Rather than uniting it with another colony and wasting a perfectly good queen, you could try and help it survive by giving it a frame of near hatching sealed brood from a colony that can spare it. A prolonged slow feed to encourage the queen to lay will also help. The most important use of uniting a small colony to a large one is when the large colony does not have a queen or for some reason the queen needs replacing, eg. the queen is old or the colony is excessively defensive. In the latter case, it is necessary to find and dispose of the queen in the receiving colony first.

Bee Sting Vaccine on the NHS



Most beekeepers become fairly insensitive to bee stings, however a few find their sensitivity increases. And there are a few people who know they react to bee or wasp stings with Anaphylaxis, but still want to keep bees. Well, help is at hand. Pharmalgen is going to be available on the NHS. This is a drug which will de-sensitise someone, such that their immune system can tolerate bee venom. About one in 200 people suffer from anaphylaxis when stung by a wasp or bee. Every year between two and nine people die after going into anaphylatic shock - the most extreme form of anaphylaxis - as a result of being stung. Contrary to popular belief, wasp stings actually cause twice as many deaths due to anaphylaxis as bee stings. Now the National Institute for Health and Clinical Excellence (Nice), which decides on whether treatments can be prescribed on the NHS in England and Wales, has indicated it will approve a product called Phamalgen. Given in a series of injections, this works by gradually introducing higher doses of the allergens in bee and wasp venom. Over time, this desensitises a person by gently stimulating their immune system.

DEALING WITH THE DEAD

Colonies that is. Everybody has a dead one sometime when over wintering bees and it is a time for a quick diagnosis as to how well we prepared our bees for over wintering. Many questions come to mind. Did my mite treatment not work, treat too late or did they starve? First of all, I believe in removing dead colonies from the apiary when I find them. Leaving them there and allowing them to be robbed out by other bees or allowing field mice to make a "paediatrics ward" out of the dead colony really isn't the best answer.

Beekeepers owe it to themselves to find out what AFB (American Foulbrood) looks like. The unmistakable smell, the telltale "scale" in the bottom of the cell and the use of a toothpick in stretching out the contents of the infected cell are part of the procedure in determining AFB. Look in a good bee book and it will explain the procedure very well. Once an AFB colony is found, the frames of honey, bees and brood all need to be burned and contents buried in the ground, and the boxes, bottom board, inner cover and inside of lid need to be scorched with heat. A butane torch works well for this. Honey and brood comb containing AFB spores are the primary way AFB gets into other hives. Robbing bees can carry the honey to other hives, so destroying the honey and comb is the answer. You reduce the chance of spread to other colonies.

The presence of field mice inside a hive can weaken a hive and destruction of combs hurts the beekeepers wallet. Replacement of damaged combs is necessary. Using the damaged combs is not a good idea AS bees may have a tendency to make drone comb where the holes are. Mice are filthy, and we need to remember we produce human food in our hives. Field mice can carry the Hanna virus, so using rubber gloves when handling combs and the old nest can be good safety precaution.

Hives that die from Varroa mites generally still have honey left in them. Bees will attempt to rob from them and leave the combs with a rough appearance. Hives usually die from the lack of an adequate amount of healthy brood and the combs can be safely reused. Using a bee brush removes a large amount of the dead adult bees found between frames. Hives that have an inadequate amount of brood will not live through winter. Bees will clean dead larvae out and readily reuse the comb. You may see dead mites on the bottom board and in severe cases almost like a drift. If conditions show that, one probably treated too late.

Starvation is a serious issue because potential for making increase and a future potential honey crop is lost. In many cases hives are lost very close to springtime and could have been saved by a gallon of syrup. On the other hand if it is the type of winter (severe cold) without a break in the weather and bees can't move to honey-filled comb, they will starve with honey less than inches away. Bees that starve will be found to have died headfirst inside a cell. Combs will contain little if any honey and masses of dead bees will be found between combs. Combs that are solidly packed with dead bees will be damp and quite often covered with mould. Some beekeepers will clean up the combs using tweezers so getting many of the bees out of the combs. In some cases replacing the comb with foundation may be the easiest way to deal with dead bees, which are damp, packed headfirst and smell terribly.

Bees do die from a disease called Nosema. Colonies where bees have defecated inside the hive and the whole front is dirty brown may have died from Nosema. Other particular symptoms include a distended abdomen, disjointed wings and a white ventriculus. Microscopic examination confirms the disease.
Bees that have died and came from starved hives, die from Nosema or where mite infestation is a problem can be used as fertilizer in a garden. Work them into the ground right away so they can break down and benefit the soil.

In dealing with the dead, we may discover we have made mistakes as we all do… Let us learn from them. Not repeating the mistakes makes beekeeping more enjoyable and allows us to make a profit.

QUEEN CLIPPING WITH A DIFFERENCE

From the introduction of Italian bees into America perhaps in 1860, beekeepers have sought ways to keep the strain, as stated at the time "pure". Quotes from an article published in 1897:

"The beginner who gets a colony of Italian bees is often puzzled to find that within a ear or so, the bright yellow rings have largely disappeared from the workers, and some of the bees are entirely black."
"So it happens that one who has a colony of full blood Italians in a, locality where black bees prevail, is almost sure to find upon the change of queens that his bees are a cross between Italian and blacks, or, as they are commonly called, hybrids.."

"On the other hand, his neighbour, who has nothing but black bees, will be surprised to find in some of his hives bees that have yellow stripes, the drones from the Italian colony having met the young queens of the black colony."

AL Aspinwall, in 'Beekeepers' Review', gives a plan whereby he thinks he has succeeded in getting the majority of his young queens mated in or near his own apiary. He cut off a sixteenth of an inch from the wings of his young queens and by this means made it more difficult for them to fly far away. Some of the queens had an eighth of an inch taken from the wings on each side, and these were equally a success.

UNITING COLONIES.

Swarm controls will have resulted in an increase in numbers. Getting back to the number you thought of first is simple: put two colonies together but do it carefully.

The accepted way to unite two colonies is using a sheet of newspaper.

The books will tell you to move the colonies close together, moving one of the a yard at a time each day, but my experience is that this is unnecessary. Simply wait until the bees have
stopped flying in the evening, remove the crown board from one hive and lay a sheet of newspaper directly over all the frames of the brood box, (use a broadsheet not a tabloid) then place the second colony over the top of the newspaper.

You can make a few holes in the paper but I never do. Close up and leave for a week before inspecting and reassembling into one unit. If there are supers, ensure
that there is a sheet of newspaper wherever adjacent boxes contain different bees.

A few precautions.

- loosen all hive parts and take any brace comb off the bottom of the frames of the top box beforehand, preferably earlier in the day. At the same time remove the queen you do not wish to keep. Put a queen excluder on top of the newspaper so that the queen is confined in one box and also to hold down the newspaper.

I find a fine water spray will keep the bees in the bottom box immobilised for the short time they are exposed.

Honey bees' electric charge makes them easy prey for spiders

Pity the honey bees – as if they did not have enough to contend with, it seems that even the act of flying makes them easier prey for spiders.

Scientists have found that tiny electrical charges that build up as bees fly attract spider silk, making them more likely to be snared in a web.

The researchers claim electrostatic charge created by the fiction of the bee's wings in the air is enough to deform the web and draw it closer to the insect.

"Insects can easily acquire electrostatic charge by walking over charged surfac-es or by flying in an airstream of charged particles," said Dr Victor Manuel Orte-ga-Jimenez, a research fellow at the University of California, Berkeley.

"We have shown that electrostatically charged insects can induce rapid and comparably sized deformations in threads of the cross-spider's orb web.

"Such deformations are likely to in-crease the risk of capture for free-flying prey."

Flying insects such as honeybees, bumblebees and flies are known to develop electrical charges of hundreds of coulombs, the unit used to measure electrical charge.

This can help nectar and pollen stick to bees, but it appears to also leave them vulnerable to predators too.

Dr Ortega-Jimenez and his colleagues studied how the webs spun by the Euro-pean garden spider Araneus diadematus, deformed when dead insects that had been given a small positive electrical charge were dropped past them.

Many spider webs are either neutrally charged or carry a negative charge that is attracted to the positively charged insect.

Dr Ortega-Jimenez found that spider web silk strands could move by several millimetres as an electrically charged insect passed by – enough to mean the difference between life and death.

Those without a charge did not cause the web to move.

For bees the findings reveal yet another hazard facing these insects. Honey bee populations have halved in the past 20 years while bum-blebees have also suffered serious declines.

Growing levels of disease, reductions in wild flower meadows where the bees forage for food, pesticides and climate change have all been blamed on their decline.

Dr Ortega-Jimenez, whose findings are published in the journal Scientific Re-ports, said this effect may have driven spider web evolution.

He said: "Using a high speed camera, you can clearly see the spider web is de-forming and touching the insect before it reaches the web.

"You would expect that if the web is charged negatively, the attraction would increase."

"Electrostatic charges are everywhere, and we propose that this may have driv-en the evolution of specialised webs."

Do bees sleep?

Honeybee (*Apis mellifera*) foragers are among the first invertebrates for which sleep behaviour has been described. Foragers (typically older than 21 days) have strong circadian rhythms; they are active during the day, and sleep during the night. We explored whether young bees (under 3 days of age), which are typically active around-the-clock with no circadian rhythm, also exhibit sleep behaviour.

We combined 24-hour video recordings, detailed behavioural observations, and analyses of response thresholds to a light pulse for I individually house bees in various arousal states. We characterized three sleep stages in foragers on the basis of differences in body posture, bout duration, antennae movements and response threshold.

Young bees exhibited sleep behaviour of the same three stages. Sleep was interrupted by brief awakenings, which were as frequent in young bees as in foragers.

Beyond these similarities, we found differences in the sleep architecture of young bees and foragers. Young bees passed more frequently between the three sleep stages, and stayed longer in the lightest sleep stage than foragers.

These differences in sleep architecture may represent developmental and/or envi-ronmentally induced variations in the neu-ronal network underlying sleep in honey-bees. To the best of our knowledge, this is the first evidence for plasticity in sleep be-haviour in insects. *Eban-Rothschild, A. D., &*

Question - Which Pheromones do bees use to communicate ?

A number of different pheromones are used for collective communication. Bearing in mind the hive is dark, bees can't actually see each other, they also rely on touching, vibration but pheromones are key. They are picked up by chemoreceptors (plates and pegs).
The pheromones are transferred by antennae (each holds 30,000 chemoreceptor or plates which collect and react to different pheromone chemicals), as well as through dancing, food sharing and touching (chemoreceptor known as pegs).

There are 2 types of pheromone: primer and release. Primers are non volatile chemicals and produce a change in physiology e.g the suppressing of ovaries in workers to produce eggs. They have a low vapour pressure, don't evaporate and there is long term control. Releasers are used for short term use e.g. sting pheromone.

Worker Pheromones include two **Alarm Pheromones**: one is released by the Koschevnikov gland, near the sting shaft, attracting other bees to defend the location (often smells of bananas or pear drops). The other alarm pheromone is released by the Mandibular glands and consists of 2-heptanone, a compound which has a repellent effect and perhaps is used to deter potential robber bees. It is also used to bite mites and anesthetizes them for approx 15 minutes, paralyzing them so they either drop off the bee (hopefully onto an open mesh floor) or bees can remove them from the hive. There is much research taking place into using this pheromone in the pharmaceutical industry in future.
Worker bees emit **Nasonov Pheromone** from the end of the bee abdomen and it is used for orientation, marking the hive for foragers and by scout bees to create a trail to follow.
Footprint pheromone is left by worker bees and the Queen as they walk, produced by the Anhart gland and secreted at the pad of the foot and enhances Nasonov in searching for nectar (lasting for four hours in warm weather and four days in cold on flowers/plants). In the Queen this is an important oily secretion from the tarsal glands, that she deposits on comb to inhibit queen cells from being constructed and potential swarming. Where the colony is large and no footprint pheromone is left, or the queen is failing then a new queen will be created.
Older foragers release Ethyl Oleate, or **Foragers Pheromone**, to slow the maturing of nurse bees, to ensure a healthy balance of bees in the colony between nursing and forager bees which are needed by the colony at that time.
The **Dufour's gland pheromone** is secreted into the vaginal cavity, deposited on eggs to distinguish between eggs laid by the queen and those laid by a worker. There are as many as twenty four chemicals which differentiate between workers in 'queenright' colonies and workers of queenless colonies. The secretions of workers in queenright colonies are long chain alkanes, but those of egg-laying queens and egg-laying workers of queenless colonies include long chain esters.
Another pheromone that helps nurse bees distinguish between eggs laid by the queen or workers is the **Egg Marking Pheromone**.
Larvae and Pupae emit a **Brood recognition pheromone** inhibiting ovarian development in workers, also helping nurse bees distinguish between worker and drone larvae, promoting sealing of the cell.
Drones produce a **Drone pheromone** to attract other flying drones to congregate at sites suitable for mating with a virgin queen.
Queen Mandibular pheromone (QMP) is probably the most important pheromone, affecting social behaviour, maintenance of the colony, swarming, mating, inhibition of ovary development in workers and attract the workers to their queen. QMP consists offive chemicals: 9-ODA , (-) isomer (9-HDA), (+) isomer of (9-HDA), HOB and HVA.
Four other compounds have also been identified, of which only one is found in the mandibular glands. The combination of the 5 QMP compounds and the four other compounds below is called the **Queen Retinue Pheromone** (QRP). These nine compounds are important for the retinue attraction of worker bees around their queen.
Rectal gland pheromone produced by a virgin queen and released with faeces. The pheromone repels and is used when a new queen feels threatened by the workers to keep workers from removing her from the hive.
The **Renner Baumann glands** are located on the free edges of the abdominal tergites A3, A4 and A5 of the queen. The Queen grooms her-self 3-4 times every hour spreading a combination of her pheromones over her exocuticle.
There are also **Wax gland and comb pheromones**. Wax is secreted by workers aged 12-18 days old from four pairs of wax glands inside the exoskeleton on ventral side of bee's abdomen. When building combs bees hang in festoons near the building site after gorging themselves with honey, waiting for the wax to form.

<u>Does the Brood Play a Role in Pheromone Communication ?</u>

Larvae are seemingly pretty inert individuals, sitting curled up in their cells doing very little except eat, but brood has a huge influence on the workings of the colony: the amount of sealed brood present is very influential in determining whether a colony sends outcasts after the primary swarm has left, the presence of brood suppresses laying workers much more effectively than a queen, brood has an Influence on foraging, the type of brood influences feeding regimes and there are many more ways in which brood is important.

So how does the brood communicate with the colony so that the nurse bees 'know' what brood is present and understand how to feed it, when to cap it over and so on? Other questions that arise, as far as adults are concerned, are recognition of nest mates at the various stages of their lives and identification of the different types of bee in the hive. We know the queen produces pheromones which influence behaviour in the colony, and the workers, Nasonov pheromone; but we should also consider a group of chemicals which have a profound effect on colony organisation and are produced by all the individuals which are part of that colony. The outer covering of the honey bee, whether larva or adult, is a complicated structure containing many different chemical compounds. They include ten fatty acid esters which seem to be particularly important as pheromones. (For those of you with chemistry backgrounds these substances are the methyl and ethyl esters of palmitic, linoleic, linolenic, stearic and oleic acids.) In the larva they appear to be produced and stored in the salivary glands. The same esters are produced by all stages, but in differing amounts, and different mixes, according to the age of the larva/ pupa/ adult and the gender and caste of the adult. This enables worker bees to distinguish between worker, drone and queen larvae so that they can have different mixes of brood food, allows the workers to recognise the age of a larva and therefore what type of food that larva requires at any particular time, and to cap over the larvae at the correct age. For example: at the time of capping, four of the esters seem to be of particular significance and the larva produces between five and ten times as much of them as when it is younger.

These brood pheromones have a profound effect on the worker bees, affecting their physiology, so that in colonies with plenty of brood pheromones, the age at which a worker starts foraging will be later than where there is little brood. The pheromones wll also suppress the production, in the adult bees, of Juvenile Hormone (JH). This is an important hormone which helps to regulate the aging of the workers and, among other things, helps to determine the age at the onset of foraging. In addition, more brood pheromone results in a greater collection of pollen. This is obviously necessary for the production of brood food but we now have an explanation of the underlying control of an observed effect. Put together, these various effects on the workers will result in more nurse bees producing more brood food for the large amount of brood. As well as giving the nurse bees information about the brood, these esters have an undesirable effect as they are used by varroa mites to detect the correct time to enter cells of the fully-grown larvae.

Chemicals which influence the behaviour of another species to its benefit are not called pheromones, but kairomones. It is an interesting concept that a single chemical, or in this case, a mix, can act as a pheromone for the species producing it, enabling the bees to cap over the larvae at the appropriate time while also acting as a kairomone for another species, in this case the varroa mite. Varroa is attracted by three of the esters, and particularly by methyl palmitate, and it is interesting that, in queen larvae, these three are at about half the strength when compared to workers. There is another ester, methyl oleate, which repels the varroa mite and this is produced in large amounts by queen larvae. These two facts combine to help protect the valuable queen larvae from being parasitised by the female varroa mites. On the other hand, the different mix of esters on the drones' cuticle, as well as the extended period before capping preferentially attracts the mites to their cells. A great deal of research work has been done recently on the effects of these fatty acid esters and it is becoming increasingly clear that they have a major effect on colony organisation, but, at the same time, it must be clearly understood that they work in conjunction with other pheromones, sometimes being antagonistic to them and at other times working synergistically. It is true to say that the more we learn about colony control the more complicated it becomes and the more questions arise that need an answer.

Hive Roles (2) - Multi-tasking and 'Heater Bees'

We know honeybees have age dependent jobs in the hive. However, younger bees sometimes fill the 'older bee jobs' earlier than normal when not enough bees are doing the work needed by the colony. For example, if there are not enough foragers, younger bees can become foragers at an earlier age. This allows for greater hive flexibility. We also know bees somehow bees know who goes in the swarm and who stays with the mother hive. Bees do not have to 'pick a number', to decide - like we do! Do they read each other's minds? Instead of thinking of a single bee job one after another based on a bee's age, we canexpand the concept to a colony need based model' with some job rotation. One good example of this are 'heater bees' . These bees are a more recent discovery . Bees of almost all ages can become 'heater bees'. They do this by detaching their flight wings and the vibrating their bodies while their wings are mot ionless. By doing this they can heat their bodies up to 30°C in the brood area. Good queens may leave empty brood cells to be used by 'heater bees' to crawl in and keep the surrounding seventy cells at the right temperature. This makes it very important to give the queen enough room in the brood nest so she does not have to lay eggs in the cells she wants to leave empty.

This is not the occurrence of 'spotty brood' which is a problem of queen/hive weakness. The normal brood temperature is kept by the nurse and house bees at 20°C. Thebees emerging from this temperature have a normal hive job progression. When 'heater bees' raise the brood temperature to 27°C, the brood that hatches prefers to forage more than to do other hive jobs. Consequently for this reason not chilling the brood is critical throughout the year. 'Heater bees' are given food by supplier bees who feed the 'heater bees' so they can keep a consistent temperature where they place themselves in the brood nest. Two-thirds of the nectar or honey used by bees in a colony is to generate heat! Then other bees rotate in and become 'heater bees' when needed. Every bee cooperates by doing their part of the work needing to be done for the good of the hive! The more we look into the life of bees in our hives, the more we can see bee'multi-job tasking' and job rotation involves complex decision making honey beehaviour!

Lovely setup.

The Bee Meeting

Who are these people at the bridge to meet me? They are the villagers-- The rector, the midwife, the sexton, the agent for bees. In my sleeveless summery dress I have no protection, And they are all gloved and covered, why did nobody tell me? They are smiling and taking out veils tacked to ancient hats. I am nude as a chicken neck, does nobody love me? Yes, here is the secretary of bees with her white shop smock, Buttoning the cuffs at my wrists and the slit from my neck to my knees. Now I am milkweed silk, the bees will not notice. They will not smell my fear, my fear, my fear. Which is the rector now, is it that man in black? Which is the midwife, is that her blue coat? Everybody is nodding a square black head, they are knights in visors, Breastplates of cheesecloth knotted under the armpits. Their smiles and their voices are changing. I am led through a beanfield. Strips of tinfoil winking like people, Feather dusters fanning their hands in a sea of bean flowers, Creamy bean flowers with black eyes and leaves like bored hearts. Is it blood clots the tendrils are dragging up that string? No, no, it is scarlet flowers that will one day be edible. Now they are giving me a fashionable white straw Italian hat And a black veil that moulds to my face, they are making me one of them. They are leading me to the shorn grove, the circle of hives.

Is it the hawthorn that smells so sick? The barren body of hawthorn, etherizing its children. Is it some operation that is taking place? It is the surgeon my neighbours are waiting for, This apparition in a green helmet, Shining gloves and white suit. Is it the butcher, the grocer, the postman, someone I know? I cannot run, I am rooted, and the gorse hurts me With its yellow purses, its spiky armoury. I could not run without having to run forever. The white hive is snug as a virgin, Sealing off her brood cells, her honey, and quietly humming. Smoke rolls and scarves in the grove. The mind of the hive thinks this is the end of everything. Here they come, the outriders, on their hysterical elastics. If I stand very still, they will think I am cow-parsley, A gullible head untouched by their animosity, Not even nodding, a personage in a hedgerow. The villagers open the chambers, they are hunting the queen. Is she hiding, is she eating honey? She is very clever. She is old, old, old, she must live another year, and she knows it. While in their fingerjoint cells the new virgins Dream of a duel they will win inevitably, A curtain of wax dividing them from the bride flight, The up flight of the murderess into a heaven that loves her. The villagers are moving the virgins, there will be no killing. The old queen does not show herself, is she so ungrateful? I am exhausted, I am exhausted ---- Pillar of white in a blackout of knives. I am the magician's girl who does not flinch. The villagers are untying their disguises, they are shaking hands. Whose is that long white box in the grove, what have they accomplished, why am I cold.