Beetalk March 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

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Propolis For You?

Some considerable time ago (pre-Varroa), one of our members gave a talk on the health benefits of propolis. Arthur Gillette was an elderly gentleman whose looks and demeanour belied his age. His method and use of propolis I give below:

1. Collect clean propolis by scraping off with a spoon (a knife can break up the propolis).
2. Place the propolis on the lid of a honey jar, put the lid on to a radiator to make the propolis softer and pliable.
3. Roll the propolis in the hand into pill size pieces (about the size of a match head).
4. Drop into a small, lidded container into which you have put icing or caster sugar and shake to coat the pieces with the sugar. This will stop the pieces sticking together. Dosage In the Summer he took 2/3 pieces per week. In Winter – 1 piece per day . He advised, if you intend to go to crowded places, (especially indoors, e.g. the cinema) take one beforehand. Propolis can be bought from some health shops, and from beekeeping suppliers (e.g. Thornes) as can tincture of propolis. The tincture is superb for treating sore throats and warding off impending colds. Simply place several drops as far back in the throat as possible.

Far from being only a cementing agent, Propolis performs a number of valuable functions for the hive. Fungal infections can destroy a colony, as can bacterial ones, but Propolis helps to prevent these infections and keep the hive clean and sanitary. Simply by rubbing against the Propolis, the bees help to protect themselves against infection from the external elements, but also help to spread the inhibitory qualities throughout the hive. A 'Google' search revealed a lot of claims for the health benefits of propolis - more than there is room for here.

ASIAN HORNETS.

One of the concerns this year as beekeepers, must be the possibility that the Asian Hornet (Vespa Velutina) will reach our shores. The hornet, since its introduction to France in 2004, has now made its way into Belgium and Spain- we are told a single Queen arrived in France in a consignment of bonsai pots imported by a garden centre. We would like anyone living near garden center's, freight terminals, ports, fruit and vegetable importers, timber merchants or any facility that imports goods from the continent, to help us bmonitor the situation. The National Bee Unit and the Non-native species secretariat have produced guidance sheets and posters detailing how to trap and identify this threat to our colonies. The trap specified in the guidance notes has some special features which will allow non target species to escape if they are attracted to the bait, It will also exclude our native hornet, which is not aggressive and we have no wish to persecute it, so please follow the instructions carefully if you would like to help. There is information available about the Asian hornet on Beebase if anyone needs to know more, as the situation is far worse with the Asian Hornet and can lead to the destruction of an entire colony. The Asian Hornets will hover at about 30cm from the entrance to the honey bee colony where they pounce on returning bees that are carrying pollen. Here they remove the wings and legs before making a little "meat ball" that they transport back to their nest to feed their own larvae. Having found a colony, they will sometimes arrive in numbers to take an easy food source. The consequences for the bee colony can be catastrophic as the colony becomes starved due to the loss of foraging bees.

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20 things I learned in my first 8 hours as a beekeeper.

1) A nuc transit box is remarkably unprepossessing - so no dramatic drive home in a bee suit. Dammit.
2) You get the smoker going, dress up, open the nuc and.....nothing much happens.
3) A smoker is child's play if you were in the Scouts.
4) Not much continues to happen - then, suddenly, an hour later, you realise there's a hell of a lot of bees flying around.
5) Some of these little beggars don't know how to fly!
6) There's a lot of bees in a nuc.
7) The temperature of the base of a smoker is slightly higher than the melting point of the lid of a wheelie bin.
8) Cloud of bees in my garden; Yet over the (high) fence, there's nary a sight of a bee in nervous next door neighbour's garden - phew!
9) None of those clever clogs at the Dower House, pointed out that an absolute essential piece of kit, is a garden chair.
10) A bright sunny day with frequent fluffy clouds doesn't half mess with the bees' heads.
11) Pollen comes in such pretty colours.
12) Three hours, four hours - passes in no time at all.
13) A feisty cat needs lots of reassurance when she realises there are bees in her garden.
14) Yes, if you look carefully, you can see which bees have what jobs.
15) Six feet away from the hive and you're interesting; eight feet away and you might as well not exist.
16) Aviva Premiership Rugby v bees? Close one - but a half of rugby is only 40 minutes long.
17) 1 : 1 syrup tastes nice.
18) Going solo - transferring bees/frames from nuc to new hive - isn't as scary as it might be. You know, I might be able to do this!
19) One hive looks so lonely.....
20) The smile on a new bee's face, is just as stupid as the look of someone who's just completed their first scuba dive. What did you learn on your first day?

Pollinating insects from over 100 Million Years ago

With massive dinosaurs towering above, tiny female insects called thrips had just dusted themselves with hundreds of pollen grains from a gingko tree more than 100 million years ago when they perished, only to be preserved in tree resin called amber. The discovery, detailed this week in the journal Proceedings of the National Academy of Sciences, is the oldest known record of insect pollination. (Pollination occurs when either the wind or an animal, mostly insects, deliver pollen from a plant's male reproductive organ to the female parts either on the same plant or another one.) During the lower Cretaceous Period when the newly discovered thrips lived, flowering plants would have just started to diversify, eventually replacing conifers as the dominant species, the researchers said. "This is the oldest direct evidence for pollination, and the only one from the age of the dinosaurs," study researcher Carmen Soriano said in a statement. "The co-evolution of flowering plants and insects, thanks to pollination, is a great evolutionary success story." Soriano and an international team of scientists studying the two pieces of amber, which were discovered in what is now northern Spain, say the specimens date back between 110 million and 105 million years ago.

BUYING NUCLEUS COLONIES- a warning.

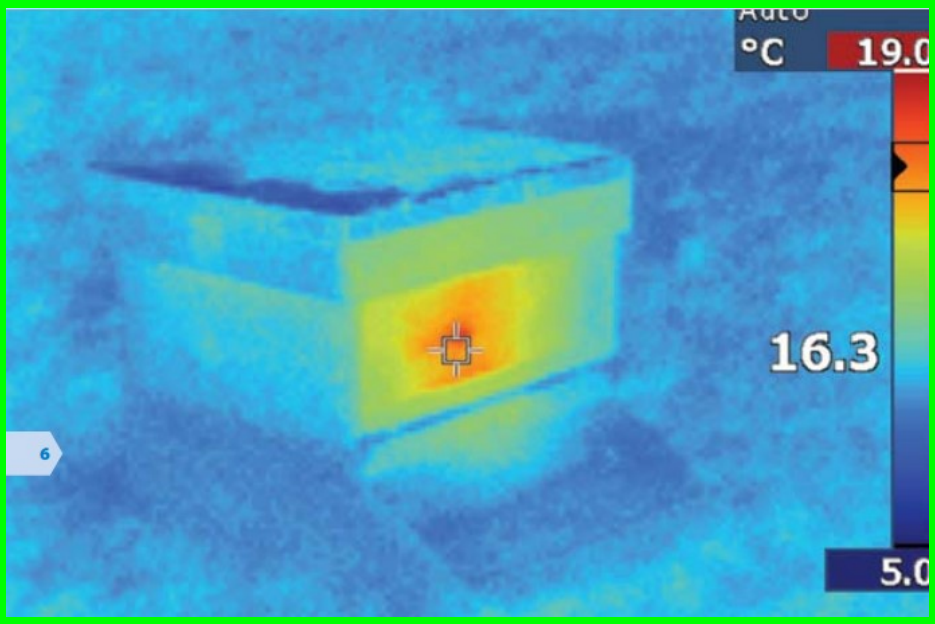
If you are thinking of buying honeybee this year, and especially if you are a beginner, it pays to be aware of the pitfalls of acquiring unseen colonies. Although there are well-established and entirely reputable companies selling bees, you can also find 'cowboys' where you may not expect to. In the past few years some of our members, ordering in good faith, have been knowingly supplied with bees suffering from nosema, or EFB, with queenless nucs, or a nuc consisting of one frame of bees-all from so-called reputable firms. The BBKA have produced a standard that all nucs should comply with, and you should ask your supplier if the nucs you wish to purchase do comply with it and what warranty is offered. It is not always possible to attain perfection when selling bees, but any shortcomings should be acknowledged by the seller. The standard can be accessed at www.bbka.org.uk Searching "nucleus of bees advice" should reveal Fera's 2 page PDF on acquiring bees.

Book for you? The Bee Garden – Maureen Little.

This excellent book is just what the bee-keeping and gardening community has been waiting for. It bridges the gap in the existing literature on bee-keeping and ecologically-friendly gardening. The book is an invaluable aid to the planning and design of a garden which will be attractive to bees, as well as beautiful and productive to humans. The book offers some practical treasures - a gazetteer of bee-friendly plants, and a number of immediately attractive and practical planting plans for bee-friendly gardeners. Maureen shows her own considerable experience as a gardener, plantswoman, bee keeper and garden designer. The book is richly illustrated with stunning photographs throughout - this cannot be recommended highly enough.

New Beekeeping Experiences.

I collected my nuc from Paynes in early April, five frames of English bees. Introduction to the hive went well, I provided them with some liquid feed, and the colony began to grow. Three weeks later lots more healthy bees and activity in my super – I was pleased. Being keen I did weekly inspections - at the end of April I noticed my first QC's. And all looked well during the official inspection by Alan Byham on the 10th May, with even more bees. I added a second brood box and super to give them room. Then more QC's appeared, some sealed this time, so I started to panic. I rushed off to buy another hive. Then removed all the QC's except one, and followed the instructions in the book for an 'artificial swarm' – except as insurance I also transferred a young queen I had found to my new hive – first mistake! However, the flying bees did their return trip and all looked good with both hives. Then one sunny afternoon at the end of May a surge of bees left my first hive. Such a wonderful sight, that it took me time to realise they had swarmed in spite of my efforts. A week later I could find no sign of a queen in this first hive or in my new hive, and no sealed QC's. Trauma overcame me, I was queen less!! Panic now really set in. A mad drive to Kent the next day to buy a new queen, which I duly introduced in her cage to the new hive. Then my saviour at Henfold gave me a sealed QC and told me how to place it in my other first hive. Relieved I thought I now had chances of reprieve for both my hives. Two weeks later the queen cage in my new hive was empty, but no sign of eggs, brood or a queen. Another week and this hive still had no sign of a queen, but strangely lots of dead bees outside the hive!! Then to my amazement I discovered a queen in this new hive – had my clever girls somehow overcome my mismanagement, and grown their own queen after nearly four weeks. Or was there some other reason for the new brood and queen? And I felt happier again - in spite of having to empty dead bees from the hive base every week, which I assumed must be normal. The beginning of July arrived and I also found a queen in my first hive, plus brood beginning to appear. I was really happy again. Throughout July there was lots of flying bees and activity. Dead bees continued to be carried out by the workers in my new hive, and I questioned if this really was normal. I also noticed a number of black bees and wondered if these are confirmation of the true English stock of my Paynes nuc - but this is not so! August arrived and suddenly I see lots of dead bees now outside both hives, some lying on their back, legs in the air. Panic really sets in once again. I call Alan Byham, but he is on holiday, so I take samples of dead bees to send for testing. But decide to wait. Alan calls me and to my delight says he will visit. As soon as he opens my hives he knows the cause – CBPV 'chronic bee paralysis virus'. The black bees were not proof of English stock after all, but caused by the loss of their yellow hairs; and the bad news, there is of course no treatment for a virus. Alan adds however, that I am lucky 'this does not occur that often' !! From then on I did all the good things I could for my girls, swept up the dead, grieved with them as the wasps dived down to eat them alive, and marvelled at how they continued to work so hard. Now all I can do is keep my fingers crossed and hope there will be enough of them left to keep warm and survive the winter. So my first season was full of traumas and tribulations, both for me and my bees – but as the Bee Inspector said, I am lucky. Lucky to be introduced to the wonders of bees, and lucky to be a member of RBKA, such an excellent club full of experienced members willing to share, and with great organisation and facilities. I look forward to my next bee year, hopefully with fewer traumas, less tribulations, and more bees.



The hive viewed with the infra-red camera; red is hotter; blue colder

The Many Uses of a Snelgrove Board Part 1 –

The Man Himself Leonard E. Snelgrove was an eminent beekeeper in the 1930s and was active up until sometime in the mid-1950s. He lived in Weston Super-Mare, Somerset and was a fellow of the Royal Entomological Society. Amongst his many achievements he was President of Somerset BKA, Hon., Life Member of BBKA, Expert and Honours Lecturer BBKA and a Past President of the BBKA. What is even more important, he was obviously a very thorough and intelligent observer of bees. Swarming – Its Control and Prevention, which introduced the Snelgrove board, was first published in 1934 and has been re-printed by BBNO (15th Edition 1998). Snelgrove also wrote important books on Queen Rearing and Queen Introduction. Introduction It is surprising how many beekeepers have a Snelgrove board amongst their collection of beekeeping equipment. Mostly it languishes in the shed unused simply because they do not know what to do with it and, if it does occasionally see the light of day, it is usually as an emergency cover board. This is partly the fault of the beekeeper, not bothering to find out about its use, but not helped by Snelgrove`s book which, in modern terminology, is not very user-friendly. The description of his methods tends to be rather prescriptive and, apparently, inflexible – that is, until you read on into the discussion. He clearly felt that most beekeepers needed detailed recipes. Another problem is that Snelgrove obviously kept a fairly prolific strain of bee because most of the instructions for his methods involve hives on double or even triple brood chambers (ie. 2-3 deep boxes below the queen excluder). Simply following Snelgrove`s instructions it is difficult to see how his methods can be applied to a hive on a brood and a half (one deep and one shallow box). The book also gives the impression that you have to do all the manipulations exactly as he describes on the precise day stated or the outcome may be compromised. It all sounds very difficult and fussy and this puts people off. Later in the book he lets his hair down a bit (not that he had very much to let down judging from contemporary photographs) and talks about all sorts of variations to meet different circumstances, but most readers have lost the plot before they get to this point. The other thing that puts beekeepers off is that for most of his methods (and most other methods of swarm control) you have to find the queen. Well, actually, you do not have to find the queen! Snelgrove recognised this difficulty and gives alternative instructions as to how to do the job without finding the queen - but, again, most people do not read this far. Snelgrove developed his board mainly for swarm prevention by pre-emptive splitting. Again there is nothing new in this idea which has been used in various guises by beekeepers starting soon after the movable frame hive came into use in the mid- 19th century. The aim of this method of swarm prevention is to judge when the colony is fully developed and on the point of swarming (but has not actually start□ed making queen cells) and then split it. Splitting has also been widely used to make increase and, in this case, swarm prevention is an added bonus. It has also been used strategically to prepare colonies for a particular nectar flow, eg. heather; recombining the splits to make a powerful colony with a full brood box and a large head of foraging bees. Snelgrove based his method on the Gerstung theory of swarming, which claims that swarming is the result of a colony having an excess of nurse bees producing brood food compared with the number of larvae that need to be fed. Snelgrove knew the theory had its detractors and retained an open-mind but still regarded it as a useful way to think about swarming. Pre-emptive splitting effectively removes a lot of nurse bees from the presence of the queen and brood. The Gerstung theory was finally disproved as a result of work by Butler and Simpson at Rothampstead in the 1950s but, theory or no theory, Snelgrove`s methods still works. A half-way house to fully splitting a colony is the much older Demaree Method (1892), where brood combs are put to the top of the hive (on top of the top super) but not on a separate floor, ie. They remain in continuity with the rest of the hive. This method removes nurse bees from the main brood area and it also relieves congestion. It gives less control than a Snelgrove board (or other split floors) and an initial check has to be made that queen cells have not been started at the top of the hive where the bees may be isolated enough to regard themselves as queenless. The more supers there are between the main brood area and the brood on top of the hive at the time of the manipulation the more likely it is that queen cells will be produced. All that is necessary is to destroy these queen cells (once) and there will be no young brood from which the bees can make further cells. The Demaree Method also suffers problems with drone brood hatching out above the queen excluder, the poor dears being unable to get out and therefore perish on the queen excluder. The Snelgrove Board Snelgrove`s design of board was not entirely original. There had been `swarmboards` or `split-boards`, as they are often called, around since before 1900. A design of a very similar board (by J E Chambers) appeared in the American journal, Bee Culture, in 1906 and there are several more recent boards, such as the Wilson, Cloake and Horsley boards. As I have not used any of these other boards, I am not sure what they offer but I doubt any are as flexible in use as the Snelgrove design. Basically a Snelgrove board is an intermediate floor but instead of one entrance it has eight! This seems a bit excessive until you understand their use. The board is constructed like a cover board with bee-space on both sides. For the doors to work well and provide good access it is better to increase the bee-space on either side of the board from the normal 6-7mm to 9mm. Most of my boards have 9mm bee-space on the underside and 12mm on top. The extra space on top aids ventilation to the upper colony. Paired doors are located in the middle of the three (or four) sides; the upper doors connect to the topside of the board and the lower doors to the underside. In the middle of the board there is a hole which, in normal use, is covered with mesh. The paired doors provide the means of controlling the number of bees that are in the colony on the top of the split board. When a split (of any type) is initially put on the board, one top door (usually one at the side or back) is opened to allow the bees to fly. Bees that have flown before will exit from this door but return to the entrance at the front of the main hive from which they have learned to fly. Over the next few days (how quickly depends on the weather) the colony on the Snelgrove board will lose all its (previously experienced) flying bees. During this period, non-flying bees will be `promoted` to flying duties and they will regard the open door on the Snelgrove board as the entrance to their home. Meanwhile brood will be hatching out from the combs in the top colony and, after the initial loss of flying bees, the number of bees will be on the increase. After about five days there will again be a good number of bees flying from the board entrance and the beekeeper can decide whether to keep these bees with the top colony or transfer them to the colony below. Usually the bottom colony is the honey making part of the hive so the aim is to transfer as many flying bees there (to boost the number of foragers) without jeopardising the colony on the top. The colony at the top needs to be able to feed itself, guard itself and if it is making queen cells – which in most uses of a Snelgrove board it is – it needs to have enough bees and food (pollen and nectar) to make a good job of this important task. The transfer of bees into the bottom part of the hive is accomplished by closing the door through which the bees are currently flying and opening the door immediately under it. Another different door on the upper side of the board is now opened from which the bees in the top colony fly (it can be at 90o or 180o to the original entrance – it does not really matter). Flying bees will now exit the top colony through the new door but return to the position of the previous entrance and (usually after a slight hesitation) go down and join the bottom colony. Again the top colony will `promote` bees to flying duties to replace the loss but, of course, this will be at the expense of house bees. The door changing process can be repeated in about 5 days' time, and more bees will be transferred to the bottom colony, but only rarely is this necessary or desirable. Rather than following any fixed rule about the transfer of flying bees to the bottom colony, it is better to base the decision on what you can see. Lift the cover board on the top colony and, if necessary, look at a few frames. How many bees are in the top colony? How much brood is there still to feed and to hatch and are there enough bees to look after it? Are the queen cells in the top colony sealed, ie. is feeding of these potential new queens complete? Another factor that may affect your decision is the time in the season in relation to a possible nectar flow. Is the split primarily for swarm prevention? Are you trying to make a new queen for the colony or are you trying to make multiple queens by distributing queen cells to nucs? The decision over changing doors is not critical and the worst that will happen by not doing it is that you may end up with so many bees on top of the board that you have to add an extra box of comb to accommodate them.

It is better to err on the side of caution because having too many bees in the top colony is preferable to having too few and getting it robbed-out. The only rule is that any door changing must cease when there is likely to be a virgin queen in the top colony wanting to fly and get mated. Having her return, be confused over entrances and go down into the bottom colony would be seriously counter-productive. Even after a new queen has started to lay in the top colony, it is unwise to do any door changes for about 5 weeks. This is because, by the time the new queen starts to lay, virtually all the bees in the top colony will have had flying experience and changing the doors would transfer the majority downstairs. A few would stay behind to tend the brood but this would render the colony wide open to robbers. It is only after about 5 weeks of the new queen raising her own bees that there will again be a fairly normal age structure in the colony. I usually find it better to leave the top colony alone with its new queen and, if it builds up sufficiently while there is still a nectar flow, add a queen excluder and super(s). The other time to avoid changing doors is if a robbing spree is in progress – wait until the evening or another day when things have quietened down. One of the big advantages of a Snelgrove board it that it enables you to do a whole range of operations under one roof. This economises on equipment – one stand, one floor, one cover board, one roof. All sorts of options are open for the colony on the Snelgrove board; it can be re-united with the colony below; it can be moved away and given its independence, it can be united to a queen-less colony. If for some reason the colony on the Snelgrove board fails to produce a new queen the board can simply be removed and the two colonies united. The mesh covered hole in the board means that upper and lower colonies have a similar hive smell and they can usually be united without the use of paper. Again, if robbing is in progress, a more cautious approach should be adopted. The only extra equipment required is extra boxes and frames and the Snelgrove board itself. Because Snelgrove boards are not an everyday item of beekeeping equipment, they do not come cheap if you want to buy one but are really quite easy to make – no fancy joints, just accurate cutting, nailing and gluing. Do not be tempted to cut entrances in a standard cover board (as is sometimes advised) as this will not result in a satisfactory board. Uses of the Snelgrove Board Having discussed the origins of the Snelgrove board and the principles of its use, we come to the all-important question, what can you do with it? The following is a list of the main uses which will be dealt with in detail in later articles in this series. Pre-emptive swarm prevention (the original use of the board and described above) – for use when no queen cells are present in the colony. Swarm control – for use when queen cells are present in the colony. Snelgrove describes two methods (well three actually, but I have not tried the third). Method I (as he calls it) which is simply a vertical (all under one roof) artificial swarm which is the same in principle as the Pagdon method. Method II for which there is no name, consists of putting all the brood plus queen cells and the queen on a Snelgrove board on top of the hive. The queen cells are torn down, the queen starts to lay again and about 10 days later a second round of manipulation brings the queen back down to rejoin the flying bees at the bottom of the hive. At first sight this seems counter-intuitive but it does work and there is a logical explanation. Making increase and queen rearing – the latter on a small scale (which is what we should be doing anyway to maintain genetic diversity). Raising new queens and the potential to establish new colonies (or uniting colonies easily if increase is not required) are all by-products of the above methods of swarm prevention and control. There are some other rather sneaky uses that I doubt Snelgrove had in mind but, nevertheless, come in handy to solve specific problems.

Varroa: mites in bees' clothing?

Varroa destructor is still a large problem, especially due to resistance development to pyrethroid-based miticides (eg Apistan). Usually beekeepers use an integrated pest management (IPM) approach to Varroa control, incorporating miticide chemicals with other control mechanisms (eg drone comb removal, open mesh floors etc).

At a recent International Bee Research Association conference it was said there was a need to get back to basics on understanding Varroa mite biology. The mite gets into a hive initially by hitching a lift on the back of a forager bee which carries it into the hive. Once inside the hive the mite hops off onto a nurse bee on the brood comb.

The mite is able to 'smell' the difference between these two bee types.

The mite then gets into developing brood and lays eggs in a capped cell. Ricky's research questions are about how Varroa mites can avoid detection by bees inside the hive. Why do guard bees at the hive entrance or inside the hive not spot those returning forager bees carrying Varroa mites on their backs? Smell is the main dominant sense to distinguish between insects, including bees – especially due to pheromones. These include: • Queen pheromones (eg 9-oxodec-2-enoic acid [9-ODA]) HO O O • Brood pheromones (a blend of ten fatty acid esters) • Alarm pheromones (around 40 highly volatile chemicals) • Recruitment pheromone (secreted from the Nasonov gland)

There are also lesser known skin based pheromones. Bees have a lipid layer on their cuticle secreted from oenocyte cells beneath the skin layer (see figure, below left). Ricky's research involves extracting these lipid-soluble pheromones and then generating a 'fingerprint' by a method called organic gas chromatography – mass spectroscopy (GC-MS). This generates a chemical profile. Varroa mites may camouflage themselves by using a chemical based masking mechanism to avoid recognition by honey bees in the hive.

A closely related example is the Orasema wasp which parasitizes fire ants in their nests by mimicry of the skin pheromone profile. The wasp injects eggs inside the ant. So what about Varroa chemical mimicry? Ricky looked at a typical forager bee skin pheromone profile versus nurse bees and newly emerging bees. She found that each has a particular chemical 'fingerprint'. By looking at chemical profiles between honey bee colonies there are also very different profiles.

Ricky proposed that it would be quite a challenge for Varroa to mimic each bee type by secreting similar chemicals. She looked at Varroa mite families inside brood cells – as only the mother Varroa 'foundress' has been exposed to the general bee pheromone environment in the hive before migrating into the brood cell. The Varroa nymphs, adult males etc. have only been exposed to chemicals on the developing pupa within the brood cell. By Varroa sampling of 250 families, Ricky found that the foundress mother mites change their skin pheromone profile when moving from the forager bee to the pupa. She decided to concentrate on how Varroa mites can adjust their skin chemical expression profiles by placing mites on bee pupae sitting in plastic tubes to simulate brood cells. She found that from 0 – 27 hours that the Varroa 'smell' increases. Even within 20 minutes the profile begins to change.

This is not through biosynthesis by the Varroa, which suggests that instead it is by direct cuticular transfer from host bee skin. You can imagine the Varroa mite coating itself with the chemicals from the bee pupa skin so that it smells the same as the host bee or bee pupa. To confirm this, Ricky washed the pupae in a solvent to remove these cuticular (skin) pheromones.

A future plan will be to transfer mites between colonies of bees to see how quickly they can take on the profile of the new colony. Also she has started to look at what happens when a Varroa mite is placed upon

Bio-warfare scientists help solve CCD

The cause of the mysterious decline of the honey bee in the United States – and elsewhere in the world – may have been found in the form of a "double whammy" infection with both a virus and a fungus. A unique collaboration between university researchers and military scientists in the US has found that a combination of a virus and a fungus in the gut of honey bees may result in the phenomenon known as colony-collapse disorder. Over the past four years, bee keepers in the United States, Europe and Asia have reported dramatic declines of the key insect that is critical to the pollination of many valuable crops. Between 40 and 60 per cent of honeybee colonies have suffered a complete collapse in the US alone. One of the difficulties of finding a cause is that the affected bees often fly off in different directions leaving behind, at most, a single queen and a few workers.

This has made it almost impossible for entomologists to carry out post mortems on corpses of the missing bees. Now a team of researchers led by Jerry Bromenshenk of the University of Montana in Missoula has completed an exhaustive survey of bees that bee keepers have managed to collect from collapsed colonies to see whether they are suffering from any unusual infections.

Working with scientists at the US Army Edgewood Chemical Biological Centre in Maryland, who have developed expertise in detecting and analysing biological molecules, Professor Bromenshenk and his colleagues found that many of the bees were infected with both a virus, called invertebrate iridescent virus (IIV), and a fungus known as Nosema apis. "These findings implicate co-infection by IIV and Nosema with honey bee colony decline, giving credence to older research pointing to IIV, interacting with Nosema and mites, as probable cause of bee losses in the USA, Europe and Asia," the researchers write in their study published in the journal PLoSOne.

The scientists do not know how the combination of the two infections could be causing the disorder, but they point to the fact that both virus and fungus proliferate in cool, damp weather as well as infecting bees through the gut, indicating that insect nutrition may be involved. "Colony collapse disorder continues to impact bee colonies in the US in 2010 at levels seemingly equal to, or exceeding that of 2007, when this unusual syndrome first received worldwide press coverage," the scientists said. "The disorder is characterised by sudden losses of bees. This results in nearly empty beehives that, at best, may harbour a queen and a small worker bee population.

A vexing aspect of the disorder is that there are ample resources left in the hive, and few or no dead bees in or near the hive. Bees seem to disappear without a trace," they said. Many potential causes of the phenomenon have been suggested, ranging from pesticides to mobile phone radiation. However, several studies have pointed to viruses and other infectious agents that could somehow disorientate the bees by interfering with the complex navigation system they use to find their way to their colonies.

The scientists have yet to work out how the virus and fungus can interact, as neither seems to be particularly lethal on their own. However, together they seem to be 100 per cent fatal, the study suggests. "It's a chicken and egg in a sense. We don't know which came first... They are co-factors, that's all we can say at the moment. They're both present in all these collapsed colonies," Dr Bromenshenk told The New York Times. Earlier research by scientists at the University of California, San Francisco, identified the fungus as a possible cause of the problem.

The US Army and Montana team were able to analyse the biological molecules present in dead bees to point to the link with the IIV virus – a technique developed to analyse potential biological and chemical weapons.

Most US store honey isn't honey"

According to tests done for a US food safety publication, more than three quarters of the honey sold in American stores is of dubious quality as the pollen has been "ultra-filtered" out of it. In some cases, all the honey sold at the outlet had 0% pollen.

The removal of these microscopic particles would make the honey fail the tests that most food standards agencies in the world employ—without pollen, there is no way to determine whether the honey came from legitimate or safe sources—or even whether it is true honey at all. In the U.S., the Food and Drug Administration says that any product that has been ultra-filtered and no longer contains pollen isn't honey.

Ultra filtering is a high-tech procedure where honey is heated, sometimes watered down and then forced at high pressure through extremely small filters to remove pollen. One advantage of it for the retailer is that it removes everything which might cause the honey to granulate, thus guaranteeing liquid honey, which most customers (in complete ignorance of the nature of honey) prefer.

This is a preference which, unfortunately, is supported by our honey judges. The Food Safety publication decided to test honey after an earlier investigation had found Indian honey which was banned in Europe as unsafe because of contamination with anti-biotics and heavy metals. Richard Adee, an American bee farmer with 80,000 hives, gave this quote: "Honey has been valued by millions for centuries for its flavour and nutritional value, and that is precisely what is completely removed by the ultra-filtration process.

It's no secret to anyone in the business that the only reason to ultra-filter out the pollen is to hide where it initially came from, and the fact is that in almost all cases that is China," Adee added. Professor Ambrose of North Carolina State University, says bluntly, "Unless you're buying honey from a beekeeper, you're at risk

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Climate change makes seasons earlier

Studies have revealed that Britain's trees are producing fruit on average 18 days earlier than a decade ago.
Acorns are ripening 13 days earlier, and Rowan berries are ready almost a month earlier. The findings were published by "Nature's Calendar", formerly known as
The UK Phenology Network, a data collection agency coordinated by the Woodland Trust and the Centre for Ecology and Hydrology in Oxford. Since about 2000, the scheme has been collecting data on things such as the dates of fruit ripening, leaf-colour change and fall, and the last birds seen.
All the fruit-ripening dates seem to have steadily advanced over the past decade and experts warn that one consequence could be that animals' food reserves will become depleted earlier in the winter.

Use of Cuprinol on Bee Hives ……

This is the reply received from the manufacturers of Cuprinol, when asked about using their wood preserving products on bee hives.

"I can confirm that our formulations have changed and that currently none of our products are suitable for this type of application."

This is clear confirmation of 'rumours' to this effect that have been circulating over the past year or two. Note that this means that we should no longer use the Cuprinol Clear preservative that many of us have used for many years on our hives, (except perhaps on the outer lifts of WBC hives). Thornes, also confirmed that they no longer recommend 'Cuprinol Clear'. Thornes can supply a water-based wood treatment called 'Lifetime', but they say it is cosmetic rather than preservative. They also confirmed that cedar hives do not require preservation materials to be applied, although they do weather to a greyish colour.

Some thoughts on the use of oxalic acid vapour for controlling varroa mites in the hive

The popular treatment of dribbling Oxalic Acid (OA) over combs in the hive requires opening colonies for the winter treatment. Also, there are issues of bee toxicity and depressed Spring brood-rearing due to bees ingesting some of the syrup. Both these issues can be circumvented by applying the acid in vapour form. OA requires heat to vaporise. Once vaporised, though, OA can disperse throughout the colony, and then recrystallises into a fog of tiny crystals that attach to all surfaces (wood, comb, bee's body, mites etc.). This vapour dispersion has the advantages of exposing the majority of phoretic mites to the tiny crystals, and there is no incentive for the bees to ingest it, since it is not mixed in sugar syrup, thereby minimizing any toxic effects it may have on the bees. There is a vaporiser on the market (Varrox, made in Switzerland, see http://www.dave-cushman.net/bee/oxalic.html) consisting of a small pan into which is put a gram of OA crystals before it is inserted into the hive entrance, which is then sealed. The pan is then connected to a 12v battery. The OA vaporises and the device removed. After about 3 minutes, the now empty unit is removed, and recharged with crystals for the next hive. Several units are generally run simultaneously, and in rotation. Time taken is about 5 mins. per colony, no opening of the hive or other disturbance of the bees is required and the bees are not apparently alarmed or upset in any way. The beekeeper can begin treating second and subsequent colonies whilst waiting to re-open treated hives. However, I have made a device, similar to other DIY models, that consists of a copper tube with a cap at one end through which the crystals are introduced and a 9mm tube at the other which fits my narrow hive entrances. I heat the tube where the crystals are with a small gas blowlamp to vaporise the OA which then passes into the hive. Some references relating to efficacy, toxicity, honey residue and applications of vaporised OA: Tests carried out on broodless colonies during November and December of 2003 at the Institute of Agricultural Zoology in Rome showed an efficacy between 81% and 100%, with the best average results (85%) being for colonies treated with 1g twice with 15 day intervals. There was no significant effect found on either honey bees or their nest honey (http://www.apimondia.org/apiacta/articles/2004/enzo_1.pdf). There is a good summary of alternative organic acid treatments at http://www.moraybeekeepers.co.uk/Varroa/alternative_antivarroa.htm. As OA does not penetrate sealed brood, it is applied when brood is absent. Hence it is most successfully used for: Removal of mites from the overwintering bee population; treatment of artificial swarms and nuclei in Spring/Early Summer; and ridding bees of mites after final honey harvest.

AS WITH ANY ORGANIC ACID VAPOUR EXPOSURE RISK, GOGGLES, GLOVES AND RESPIRATOR SHOULD BE WORN.

Tucking up for winter.

Feeders are off, varroa treatment finished, all that is now needed (or maybe done by the time this comes out) is to put in my polystyrene insulation. My second year of beekeeping saw me making some of these blocks. I bought an 8ft x 4ft block of 1inch polystyrene, used for house insulation. Then I made some dummy boards out of thin plywood and glued a similar shaped piece of polystyrene to one side. These nicely replace the end frames and create warm walls on two ends of the hive.

I then glue two super-sized pieces of polystyrene together to make a block to go above the crown board. In a flash of inspiration I cut out a central round and attached a strip of wood to it so I could remove this piece in spring and add a jam jar syrup feeder. To be fair, it hasn't really worked. The first spring after that I added the jam-jars and then removed them untouched two weeks later as the spring flow started.

My work is seasonal and I can be very busy at that time of year and the spring can begin before I get any spare daylight hours on a warm enough day. I have gravel pits close by with plenty of willow, so supplementary pollen substitute feeding has also been a waste of time in the past. This spring, my first inspection on a warm enough day in March, found one colony with a heap of filled brace comb in the gap between the deep crownboard which I significantly failed to turn over after the varroa treatments – ooops.

However there was no loss. I phoned my son to bring me a honey bucket, scraped it all out and gave it back to them above the newly added super and they then stored it in the empty drawn super frames. I'm hoping for another cold sharp winter like last.

June Tips Checklist

The topical advice is be prepared, if it hasn't happened already, for swarming. This is because the recent appalling weather has meant the bees have not been able to get out and forage regularly so we have been forced to feed them. Causing the sequence - lack of food - bees hungry - feed weak syrup to encourage comb drawing and keep them going - which stimulates the bees to feed the queen to encourage her to lay - more bees - so they become crowded - and need more food. You may have added a super, but the bees don't like it up there because there is no spare food in the combs to keep them warm, so they all stay down below, becoming crowded, so…. Swarm time! ● Keep making inspections for queen cells and brood diseases.

♦ Create bait hives, and check them for occupants. If yes, feed them to help draw out the foundation.
● If you have taken off oil seed rape honey, make sure the colony has enough honey to get through future periods when nectar is not available. Feed if necessary.
● Check weekly for varroa. If you need to treat for varroa take off the supers prior to treatment. (3% oxalic acid in water trickled over the frames may be beneficial).
● Mark your queens if you have not already done this.
♦ ● Buy or make feeders, so that you have one for each of your hives.
● Ensure you have sufficient queen excluders. Three for two hives is appropiate.
● Scrape/brush wax from the excluder, and remove burr comb from the top of the frames.
● Continue to keep records for every hive.

Beekeeping in Iceland.

Gleaned from The Beekeeping Association of Iceland website www.byflugur.is Now that you have tucked your bees up for the winter, spare a thought for those who live in slightly colder climes, with a July average temperature of 12°C. Beekeeping in Iceland has been something of an on/off affair, the first bees having been imported in the 1930s from Norway.

They produced ten kilos of honey but didn't survive the winter. Every now and then the experiment was repeated but with similar results.

The Beekeeping Association of Iceland was founded in 1952 by Melitta Urbancic from Austria who imported beehives from Scotland. She cultivated honey in Reykjavik for eight years until 1960 when she was forced to get rid of her beehives due to complaints from her neighbours. The next beehives were imported from Denmark in 1975 and 1976 but in neither case did they survive the winter.

The current chairman, Egill Rafn Sigurgeirsson, studied medicine in Sweden and his mentor was a beekeeper. He returned to practice medicine in Reykjavik and decided to revive the art of beekeeping as well.

He brought 5 colonies with him from Sweden in 1998, but two did not survive the flight and the other three did not make it through the first winter. In 2000 he purchased thirty colonies from Norway and they fared worse than their predecessors with only one surviving that winter.

As so few beehives survive the harsh Icelandic winters, new colonies have to be imported regularly. These are referred to as packet bees and cost the Icelandic beekeepers is about £130. The following years brought greater success, or less failure and bees are now highly insulated for the long winters, or brought into outbuildings and cellars.

One distinct advantage of the extreme weather and isolation of the population is that the bees are virtually disease free. There has been no sign of varroa, tracheal mite, American or European foulbrood, no small hive beetle, and no chalkbrood.

Because there is no disease, there is no reason to treat with chemicals. Do they have a problem with swarming in Iceland? Interestingly enough, they had their first swarm in a half-century last summer. The country was totally unprepared for the swarm that issued. They were positive that they were 'killer bees' and the media went wild with the story.

Part of the beekeeping organization's mission now is to convince everyone that bees are not unusually aggressive and, in fact, are beneficial to the gardens and to the community. Langstroth and polystyrene hives are used most often. The polystyrene hives were first marketed in Sweden as Bee Max hives in the 1990s.

All of the hives are wrapped with a belt-like strap, enabling the beekeeper to lift them easily or to unbuckle the 'belt' and inspect them. Carnica queens have been brought in from Sweden and seem to have mixed with Buckfast drones as they are about 10% yellow in colour.

There are now 14 members of 'By' (The Beekeeping Association of Iceland) and between them they have nearly 60 colonies, having brought only twenty out of last winter. This is much better than the previous winter, when only 6 survived out of the 26 colonies that went into winter. 2010 has been a record summer in terms of weather, with exceptionally high temperatures.

They have begun to harvest honey, but there is no information on how much as yet, but they historically average14kgs per hive. The association sells its honey privately (you can order by emailing its chairman: egillrs@hotmail.com. Each 250-gram (8oz.) jar costs ISK 2,500 (USD 21, EUR 16). That's just £30.40 per lb

Very Expensive stuff (ED)

Varroa: mites in bees' clothing.

Ricky Kather gave an update talk at the Scout hut. Ricky is two years into a four-year PhD research project at the University of Sheffield, partly supported by an Eastern Associations Research Studentship (EARS). EARS aims to bring beekeepers closer to scientists.

Varroa destructor is still a large problem, especially due to resistance development to pyrethroid-based miticides (eg Apistan). Usually beekeepers use an integrated pest management (IPM) approach to Varroa control, incorporating miticide chemicals with other control mechanisms (eg drone comb removal, open mesh floors etc). At a recent International Bee Research Association conference it was said there was a need to get back to basics on understanding Varroa mite biology. The mite gets into a hive initially by hitching a lift on the back of a forager bee which carries it into the hive. Once inside the hive the mite hops off onto a nurse bee on the brood comb. The mite is able to 'smell' the difference between these two bee types. The mite then gets into developing brood and lays eggs in a capped cell. Ricky's research questions are about how Varroa mites can avoid detection by bees inside the hive. Why do guard bees at the hive entrance or inside the hive not spot those returning forager bees carrying Varroa mites on their backs? Smell is the main dominant sense to distinguish between insects, including bees – especially due to pheromones. These include: • Queen pheromones (eg 9-oxodec-2-enoic acid [9-ODA]) HO O O • Brood pheromones (a blend of ten fatty acid esters) • Alarm pheromones (around 40 highly volatile chemicals) • Recruitment pheromone (secreted from the Nasonov gland) There are also lesser known skin based pheromones. Bees have a lipid layer on their cuticle secreted from oenocyte cells beneath the skin layer (see figure, below left). Ricky's research involves extracting these lipid-soluble pheromones and then generating a 'fingerprint' by a method called organic gas chromatography – mass spectroscopy (GC-MS). This generates a chemical profile. Varroa mites may camouflage themselves by using a chemical based masking mechanism to avoid recognition by honey bees in the hive. A closely related example is the Orasema wasp which parasitizes fire ants in their nests by mimicry of the skin pheromone profile. The wasp injects eggs inside the ant. So what about Varroa chemical mimicry? Ricky looked at a typical forager bee skin pheromone profile versus nurse bees and newly emerging bees. She found that each has a particular chemical 'fingerprint'. By looking at chemical profiles between honey bee colonies there are also very different profiles. Ricky proposed that it would be quite a challenge for Varroa to mimic each bee type by secreting similar chemicals. She looked at Varroa mite families inside brood cells – as only the mother Varroa 'foundress' has been exposed to the general bee pheromone environment in the hive before migrating into the brood cell. The Varroa nymphs, adult males etc. have only been exposed to chemicals on the developing pupa within the brood cell. By Varroa sampling of 250 families, Ricky found that the foundress mother mites change their skin pheromone profile when moving from the forager bee to the pupa. She decided to concentrate on how Varroa mites can adjust their skin chemical expression profiles by placing mites on bee pupae sitting in plastic tubes to simulate brood cells. She found that from 0 – 27 hours that the Varroa 'smell' increases. Even within 20 minutes the profile begins to change. This is not through biosynthesis by the Varroa, which suggests that instead it is by direct cuticular transfer from host bee skin. You can imagine the Varroa mite coating itself with the chemicals from the bee pupa skin so that it smells the same as the host bee or bee pupa. To confirm this, Ricky washed the pupae in a solvent to remove these cuticular (skin) pheromones. A future plan will be to transfer mites between colonies of bees to see how quickly they can take on the profile of the new colony. Also she has started to look at what happens when a Varroa mite is placed upon the cuticle of a bumblebee. So what are the implications for control of Varroa mite infestation? One possibility is that honey bees could be bred to have a different 'smell' by varying their skin pheromones. The mites would then be recognized by their different smell. But it is unlikely that this will be effective because of just how good Varroa mites are at 'sucking' up cuticular pheromones from their bee hosts. Ricky plans to investigate what chemical compounds are naturally produced by Varroa mite families, eg are they alkane or alkene rich? A parallel here is with wasps and ants which mainly produce methylalkanes, in contrast to bees which mainly produce alkenes. Scientists like Ricky may be able to use modern molecular biology, including RNA interference technology, to genetically change the expression of these pheromones on the Varroa mites surface. Again, this increase could possibly lead to bees being more able to 'smell' and so destroy them. In the USA, bee scientists are trying to use RNA interference to get mites to self destruct.

Varroa destructor *on a honeybee host.*

Ricky ended her excellent update by acknowledging the support of her supervisors at the University of Sheffield, Dr Stephen Martin and Prof. Roger Butlin, her research collaborator at the National Bee Unit, Dr Giles Budge, and finally her research funding from the Biotechnology and Biological Sciences Research Council (BBSRC) and EARS.

BUMBLEBEES AND THE TRAVELLING SALESMAN.

An exercise in bee logistics

This mathematical puzzle has vexed academics and travelling salesmen alike, but it doesn't worry bumblebees. New research from Queen Mary, University of London's School of Biological and Chemical Sciences, reveals how bumblebees effectively plan their route between the most rewarding flowers while travelling the shortest distances. The research, led by Dr Mathieu Lihoreau and published in the British Ecological Society's Functional Ecology, explored the movement of bumblebees, *Bombus terrestris*, as they collected nectar from five artificial flowers varying in reward value. Dr Lihoreau said that "Animals which forage on resources that are fixed in space and replenish over time, such as flowers which refill with nectar, often visit these resources in repeatable sequences called trap-lines. While trap-lining is a common foraging strategy found in bees, birds and primates we still know very little about how animals attempt to optimise the routes they travel." Research into optimising routes based on distance and the size of potential rewards is reminiscent of the well known Travelling Salesman problem in mathematics, which was first formulated in 1930, but remains one of the most intensively studied problems in optimisation. "The Travelling Salesman must find the shortest route that allows him to visit all locations on his route," explained co-author Dr Nigel Raine, "Computers solve it by comparing the length of all possible routes and choosing the shortest. However, bees solve simple versions of it without computer assistance using a brain the size of grass seed." The team set up a bee nest-box, marking each bumblebee with numbered tags to follow their behaviour when allowed to visit five artificial flowers which were arranged in a regular pentagon. "When the flowers all contain the same amount of nectar bees learned to fly the shortest route to visit them all," said Dr Lihoreau. "However, by making one flower much more rewarding than the rest we forced the bees to decide between following the shortest route or visiting the most rewarding flower first." In a feat of spatial judgement the bees decided that if visiting the high reward flower added only a small increase in travel distance, they switched to visiting it first. However, when visiting the high reward added a substantial increase in travel distance they did not visit it first. The results revealed a trade-off between either prioritising visits to high reward flowers or flying the shortest possible route. Individual bees attempted to optimise both travel distance and nectar intake as they gained experience of the flowers. The research demonstrated that bumblebees make a clear trade-off between minimising travel distance and prioritising high rewards when considering routes with multiple locations. These results provide the first evidence that animals use a combined memory of both the location and profitability of locations when making complex routing decisions, giving us a new insight into the spatial strategies of trap-lining animals.

Source: The above story is provided by Queen Mary, University of London.

ASIAN HORNET

The possibility of the Asian Hornet arriving on our shores is increasing now that summer is coming. BeeBase has put out the information below. Please read it and look at the web sites that it recommends.

The message to Beekeepers from the NBU is as follows: • Monitoring for arrival is strongly encouraged throughout the UK, but especially in areas where likelihood of arrival is considered to be highest (S & SE England); • Make sure you know how to recognise Asian hornets – a very helpful ID sheet can be downloaded here or you can visit the NNSS website • Know where to report sightings: alert_nonnative@ceh.ac.uk

- Beekeepers and other members of the public should consider hanging hornet traps; • You can download a Guidance Note on trap design and how to make a simple version here • Spring trapping works! - Information from beekeepers in France, who are having to control hornet numbers, show that in areas where traps are deployed in springtime, nest numbers are reduced by > 90% . In the event that Asian hornets become established here, springtime trapping will thus be a very useful management tool • If you are participating in the Sentinel Apiary programme (i.e. a beekeeper who monitors your colonies for exotic pest threats to honey bees on behalf of the NBU at Fera), you can download a Guidance Note about Asian hornet monitoring here • Sign up to BeeBase (see above) – This is always important, but in the event that the Asian hornet (or any other exotic threat to honey bee colonies) arrives here, efforts to contain it will be seriously jeopardised if we don't know where vulnerable apiaries are located There are a number of links to useful information on the hornet, plus details of how to distinguish between the native hornet *Vespa crabro* and *Vespa velutina*. Although they are a similar size, a very distinguishing characteristic between the two is the dark brown thorax, hence the name "nigrithorax"

ASIAN HORNET.

Note the yellow legs and black body

In the event that Asian hornets arrive in GB: • A Response Plan for dealing with the Asian hornet has been produced; • Developed by the Food and Environment Research Agency (Bee Health Policy and the NBU), in consultation with Defra (Non Native Species Policy, and its Non Native Species Secretariat, the Response Plan was finalised in April 2012; • You can view the full Response Plan here • Its objectives are: - Early detection; - Interception and prevention of establishment; - Nest destruction to eradicate localised outbreaks (if within a limited geographical area or areas); - Development of longer term management plans where eradication is no longer possible due to the extent and number of outbreaks; - Provision of advice to beekeepers and all other stakeholders. Guidance notes for beekeepers are available here. Guidance for pest controllers on the chemical control of Asian hornet nests is available from the NBU

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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