



**MONTGOMERYSHIRE BEEKEEPERS
ASSOCIATION**

E Version of

The BeeHolder

January 2011



Some of the Hives at the MBKA Training Apiary at Gregynog



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**Any of these contacts can be used to ask a Bee Question.
They will pass it on if they cannot answer you themselves.
They are here to help you as is our website www.montybees.org.uk**

FORTHCOMING EVENTS

Saturday January	15 th 7.00pm	MBKA Xmas Dinner Music Room, Gregynog Hall, Tregynon
Saturday February	12 th 9.00am	MBKA Beginners Training day with Brian Goodwin Lecture Room, Gregynog Hall, Tregynon
Thursday February	24 th 7.00pm	MBKA AGM plus Seasonal Bee Inspectors Question Forum Plas Dolerw, Milford Road Newtown
Thursday March	24 th 7.00pm	MBKA Climate Change and Bees. Speaker Dr Robert McCall Plas Dolerw , Milford Road Newtown
Saturday April	16 th 10:00am	MBKA Varroa Management for Beginners with John Beavan Lecture Room then Apiary, Gregynog Hall, Tregynon
Saturday February	16 th 2.00pm	MBKA Apiary Visit Open Hives at our Training Apiary Theme Preparation for the Year Gregynog Hall, Tregynon
Saturday April	30 th 10:00am	MBKA Varroa Management with John Beavan Lecture Room then Apiary, Gregynog Hall, Tregynon
Sunday May	15 th 2.00pm	MBKA Apiary Visit Open Hives at our Training apiary Theme American and European Foul Brood Gregynog, Tregynon

June July August September October Apiary Visits and meetings to be announced

November Thursday	24 th 7.00pm	MBKA Jane Frank and Michelle Boudin Talk and workshops about making soaps cosmetics mead etc from honey Plas Dolerw, Milford Road , Newtown
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Editorial

I write this with snow blocking the front door; snow piled high on the hives and ice everywhere. Is it climate change? I don't know. But I am comforted by the fact that I have never lost a hive during a long cold winter. Our speaker in March Dr Rob McCall will no doubt tell us how we can cope. I am hoping he will tell us that fascinating bees such as *Osmia rufohirta* (featured on our cover) will be common place in the UK and that we will have the balmy weather of the Loire Valley and the grapes and wine to match. I am tired of struggling through the ice.

The frozen ground is holding up the building of our Bee Viewing Shelter in our Training Apiary at Gregynog. All the components are ready; we just need to wait for the ground to thaw to do the foundations. The gap between the double security barrier was supposed to have been planted with David Austin roses but the ground has been too hard for them to be dug up.

But there is one job that is best done after a long cold spell; Oxalic Acid Treatment. This is best done when there is no brood present and the recommended time is between Xmas and mid January. However, in past years some of us have actually noticed brood during this time. With the prolonged cold spell so early there won't be any brood in the hives this year. So the treatment can go ahead. There was an article on oxalic acid vapour in the last BeeHolder. This time we give a fuller explanation of how to apply it (page 10). A MBKA member has promised to put up a better U-Tube video of the oxalic acid procedure than the one mentioned in the article. We will email you when it is loaded up.

When I told SBI Peter Guthrie of my kitchen fire caused by neglecting a pan of dissolving sugar he laughed and reminded me of his bulk buy of Ambrosia. The cost is higher than the cheap deals that one can get from Price Jones for cane sugar but cheaper than sugar from a regular supermarket and certainly a saving on the excess one has to pay before the insurance provides a new kitchen. Those who attended Peter's talk last year may have been cynical about his euphoria about the Ambrosia but the sheer convenience of ready dissolved bee food has convinced me. Now is the time to book up a delivery from Peter; his Ambrosia does give the girls a tremendous spring boost.

We now have a tradition of having our New Year/Xmas Dinner during January. It is a kick off for what should be a great new year rather than a celebration of the one just finished. Perhaps indeed we should forget 2010 and look forward to 2011. The dinner should be great. It is in the newly refurbished Music Room at Gregynog. And we will have our old friend Lembit Opik entertaining us and bullying us to be ebullient about the future. Then we have a series of Training sessions starting in Mid February and continuing till May. There may be more from June onward depending on demand.

Apiary visits will mostly be at Gregynog this year. If there is rain we will hold a meeting indoors in one of the Lecture rooms. The Apiary at Gregynog will allow us to have two meetings going on simultaneously: one for the novices and one for those more experienced beekeepers. Our aim next year must be to satisfy all those interested in bees from the nursery classes of 5 year olds using our secure Bee-Viewing Shelter, to the "5-generations-beekeeping-in-my-family" patriarch.

Remember, on the website www.montybees.org.uk everything is in glorious colour.

Happy Xmas and a happy and productive New Year to you all

. Tony Shaw December 2010

We welcome as new members

Scott Davies/Newtown, Jane Milner/Bettws,

As usual the Data Protection Act prevents my publishing emails and addresses of members, but I can recommend the local telephone directory.

Report on Meetings

October Meeting with Professor Rose Cooper

What goes around, comes around: honey for wounds

In October, Dr Rose Cooper, Professor of Microbiology at the Cardiff University gave a fascinating lecture on the anti-bacterial properties of honey and how it may treat wounds, ulcers, lesions, burns etc.

Honey is composed of moisture, fructose, glucose, sucrose, maltose, other sugars, ash, nitrogen and over 600 low level components such as flavonoids, terpenes, organic acids and newly discovered bee-defensin-1. It has a pH of around 3.9 (acidic). The anti-microbial properties were first identified in 1892 by Von Ketel and in 1937 Dold discovered what "inhibine", the magic anti-bacterial component. Different types of honey have different types of properties, and darker honey is richer in anti-oxidants.



Author Michelle Boudin wanted a grisly picture of a wound healed by a manuka dressing but Professor Cooper replied *"Unfortunately I am not able to give you the grisly photos, as they are restricted by copyright agreements and patient confidentiality issues. Here is a picture of a manuka plant, though"*

Dr Cooper specialises in monofloral honey, in particular Manuka (*Leptospermum scoparium*), a tree native to New Zealand. It grows abundantly there but with its mild anti-septic taste, beekeepers unable to sell the honey, considered the trees a nuisance and dug them up until their anti-microbial properties were discovered. Only New Zealand's Manuka honey can be labelled with a Unique Manuka Factor, UMF (5, 10 or 15). The antimicrobial properties are compared to phenol. If Manuka is as effective as a solution of 5% phenol it is UMF5, if it is as effective as 10% then UMF10 etc.

Manuka honey is a broad spectrum anti-microbial agent, treating bacteria, fungi, protozoa and viruses. Dr Cooper's work on MRSA has shown that it prevents cell division and in pseudomonas it affects the surface causing the bacteria to rupture and die. Studies reveal that bacteria are unlikely to develop resistance to honey. Other studies show that diluting honey by 50% is more effective as small amounts of hydrogen peroxide is created.

Manuka doesn't grow well in the UK. Some specimen trees can be found in the Isle of Wight, Kew and the National Botanical Garden of Wales. A plantation in Cornwall at Lord Falmouth's Tregothnan estate sells its British "Manuka" honey exclusively to Harrods.

Dr Cooper showed some graphic before and after pictures of typical untreatable wounds seen in the clinic. In particular she recounted a landmark case of a boy aged 15 who was admitted to hospital in January 1999 with life threatening meningococcal septicaemia. He was in intensive care and his fingers and lower legs amputated. By September 1999, still hospitalised, he required a general anaesthetic just to have his dressings changed due to the severe pain. As a last resort medicinal honey dressings were applied, on one leg only, the other left as a control. The results were simply astonishing and by Christmas he was allowed home.

1% of the population under 65 suffers from wounds but after 65 this increases to 4% as wound healing slows down as we age. Circulatory disorders such as diabetes, chemo or radiotherapy and some medications also delay healing. Treatment costs are high, antibiotics, antiseptics, dressings, ongoing nursing care, increased hospital stays meant in 2007 the NHS spent £29.3m on silver dressings alone! Medihoney licensed in 1999 in Australia is used in open heart surgery across the world. Other commercial dressings are now available. So why isn't honey routinely used in the UK?

The NHS has been slow to adopt the honey dressings over the silver ones as evidence is supposedly lacking (in spite of 17 clinical randomised controlled trials). However further studies are ongoing in Bonn with cancer patients and elsewhere.

Can we use our own honey to treat wounds? Sadly not. As Dr Cooper points out, honey is usually sterile until uncapped but 10% of honey is contaminated with *Clostridium botulinum*, (Botulism). Medicinal honey is irradiated making it sterile though Germany is investigating a filtration method

Dr Cooper firmly believes that whole honey must be used and attempts by pharmaceutical companies to isolate the one active constituent is unwise because honey is so complex. Once again the marvellous healing power of honey was clearly demonstrated in this lecture.

Michelle Boudin (Herbalist MAMH)

November Meeting with The Well Aged Team from the Cardiff School Of Health Sciences

(Jane Frank who was due to speak was taken ill and had to cancel. Let's wish her well in her recovery. Jane says we can book her in for the same time next year (2011) this time Michelle Boudin will be assisting in what can be a difficult set of demonstrations. We are not allowed to say "potentially dangerous" in case the H&S people rush in with their truncheons.)

Aging Well Research Project

On the 25th November 2010 we, the 'Ageing Well Research Project' attended a Beekeepers meeting with the Montgomeryshire Beekeepers group in Plas Dolerw. As a project we were very pleasantly welcomed by the MBKA. Our aim for the evening was to generate some interest in our project which is exploring the beneficial effects of beekeeping and honey consumption on the ageing process. We came prepared to do some recruitment however we were overwhelmed with the positive response we had from the members. In fact we came away from the evening with close to 30 blood samples! This is a tremendous response, one of the most successful evenings of recruitment we have had to date.

What is the purpose of the Ageing Well Project?

The Ageing Well Project aims to provide information on how diet, physical activity, socio-economic status, psychological factors, the environment and outdoor recreational activities influence biological ageing.

Evidence suggests that particular lifestyle factors may have anti-ageing effects, but there is a lack of sufficient integrative data. By analysing answers, measurements and blood samples collected from participants we might be able to find out to which extent different aspects of our lifestyle impact on the biological ageing process, beyond our genetic make-up.

The Ageing Well Project is not intended to help individual participants directly. Instead it aims to identify ways of enhancing the health and wellbeing of the ageing population as a whole and to prevent early disability and death from many age-related disorders.



What happens to the results of this research?

The project aims to observe what happens to participants over time so that future generations can benefit. It is not intended to change directly what happens to people who take part. The results of the project will be published in medical or scientific journals. In exceptional circumstances these results may lead to the discovery of new drugs and/ or treatments to fight disease.

Who can I contact for more information?

If you would like more information about this project you can contact us by telephone on 029 2020 1172 or email us your query to ageingwell@uwic.ac.uk. A member of our team will respond as soon as possible. Alternatively visit our website www.uwic.ac.uk/ageingwell.

Thanks to the kind help of the Montgomeryshire group we are now able to move to a more advanced analysis of the data. You do not need to be a beekeeper to take part in the study - anyone can take part. We are currently adding the data gained from the Montgomeryshire groups with that from participants of many organisations including the BBC.

We noticed that between the discussion of our project, the questionnaires and the blood-taking your members consumed a hearty amount of tea cakes and biscuits and were animatedly discussing bees with your Seasonal Bee Inspector.

On behalf of the Ageing Well group I would like to say a big thank you to the Montgomeryshire group for making the evening such a pleasant experience and huge success.

Joann Warner, Research assistant

Please will all those who have received questionnaires through the post fill them in and return to the team in the envelope provide? This research is important. We do need to know whether there is any truth in the "rumour" that we beekeepers live better and longer lives. And why. (Ed)

Future Events

February 12th Beginners Training Day with Brian Goodwin.

Saturday 9am to 5pm Gregynog Hall Lecture Room

This event has been a great success in previous years and considerably oversubscribed. If the weather is kind it maybe possible to visit the training Apiary and open some of the hives. The cost is £20 for the one day course. This includes all teaching materials and tea, coffee and biscuits throughout the day. Bring your own lunch or eat in the Gregynog Café. Send cheque to Jessica Bennett Plas Heulwen, Llanfair Road, Newtown, Powys SY16 3JY

February 24th AGM and Question Forum with our Seasonal Bee Inspectors

As usual we will be raffling a National hive. all those members attending get one free draw. In past years this has proved a big incentive to attend and the event has been jolly and informative. We keep the AGM business to a minimum.

March 24th The Future of the Honey Bee in a Changing Climate’ Dr Rob McCall

Rob is a Climate Change Adviser at the Countryside Council for Wales (CCW). He is responsible for the implementation of climate adaptation and mitigation measures affecting biodiversity and land use over which CCW has influence throughout Wales. He also manages a beef and sheep smallholding in Carmarthenshire. Rob will speak about how climate changes in the past and projected for the future affect our bees and the crops they pollinate.

April 16th Training for Beginners in Varroa Management with SBI John Beavan

Saturday 10am to 12noon. In the Lecture Room at Gregynog and then in the Training Apiary.

There is a £5 charge for this course which covers course materials and light refreshment. Book early and send cheque to Jessica Bennett Plas Heulwen, Llanfair Road, Newtown, Powys SY16 3JY

April 16th SATURDAY 2pm at Gregynog

The first Open Hive Day will be at our Training Apiary where the theme will be preparation for the year ahead. Those not veiled-up can watch the bees in safety from the Bee Viewing Shelter which should be completed before Easter. Those attending the Varroa training session in the morning can have lunch in the Gregynog Café.

April 30th Training in Varroa (more suitable for experienced beekeepers) with SBI John Beavan

10am to 12noon. In the Lecture Room at Gregynog and then in the Training Apiary.

There is a £5 charge for this course which covers course materials and light refreshments. Book early and send cheque to Jessica Bennett Plas Heulwen, Llanfair Road, Newtown, Powys SY16 3JY

May 15th SUNDAY 2pm at Gregynog

Open Hive Day at the Training Apiary where the theme will be European and American Foul Brood: How to prevent and spot. Fortunately most beekeepers have never seen either of these diseases BUT they can be so devastating that all beekeepers should be aware of what to look out for.

Varroa, Know your Enemy

At the Bee Disease day in Gregynog I was quite horrified that some members were expressing delight at the sight of varroa under the microscopes. I hope it was delight at the journey into a microscopic world rather than admiration for the varroa mite itself.



Imagine yourself the size of a bee larvae

Varroa mites are for me the epitome of revulsion. Not only do brothers incestuously mate with their sisters but oral sex reaches a new level of depravation; they ejaculate through their mouths!! And of course they kill bees. The male, understandably, loses interest in eating; in fact it can't, and has a very short life. Since sex does not introduce any new genes, reproduction is akin to pathogenesis, virgin birth, cloning.

But somehow a genetic change must have happened for, as we all know Varroa has made the transition from the Asian bee to the European Honey Bee. The ranges of *Apis cerana* and *Apis mellifera* have overlapped for many centuries and yet varroa is a comparatively recent pest to our European Honey bee. The Asian bee has learned to live benignly with both Varroa destructor and the related Varroa jacobsoni.

In the original host, *Apis cerana*, the mite enters a drone cell before it is capped. It will be a fertilised female, ready to lay eggs. With no eyes and only smell to go by it apparently gets a signal from the larva indicating that it is the right age to receive eggs; not too young to bear the parasites but old enough to give time for the young mites to mature before the drone emerges. Incidentally drones take that little bit longer to emerge than workers which is critical to the mite's development. Things happen quickly: the mite lays about five eggs; the first to hatch is a male and he inseminates all the others that hatch, his sisters. The females then attach themselves to the drone and draw nourishment until the weakened

drone emerges. The four or so young mites jump out at the same time and scramble around looking for another drone cell to infect. They hitch rides on workers and often fall or are groomed off. By attaching to foragers and drones the mites spread from colony to colony since both of these occasionally 'drift'.

Varroa has been seen on a number of species: a bumble bee heavily infected is not an uncommon sight. Other insects infected are the sacab beetle and flower fly, *Palpada vinetorum*. But in these cases the parasite is merely sucking the haemolymph of its host; we have no evidence yet that it is actually breeding on these species. The original infestation of the European Honey bee was the same. At first varroa did not reproduce with colonies of the European Honey bee. That's because the mite failed to detect that vital signal from the bee larva that it was time to lay eggs. Varroa Destructor from the colder parts of Asia Korea, Japan and the mountains of the Philippines, first learnt to detect that vital signal probably sometime in the 1960ies. Only recently have we found that *V jacobsoni* has also learnt the signal. If we can understand the nature of this signal we might find a way to the effective control of the mite.

Tony Shaw

Using Oxalic Acid

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.

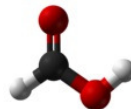
This short article is something that has been put together from reading about oxalic acid, listening to the experiences of others and also from my own experience of using it in my hives for the last few years. First we have to remember that oxalic acid is a dangerous chemical and should be treated with 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. Second 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' in beehives. However, as we all know it has the side effect whilst doing this 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.

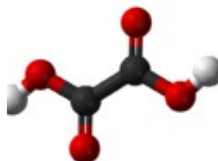
There are 3 ways of treating with oxalic acid that are described here. The first is spraying, where the oxalic crystals are mixed with water and applied to the face of the frames and bees using a hand held sprayer like those used for indoor plants. The disadvantages of this method are the great disturbance to the bees and also, as the solution is just water and acid, it does not 'stick' to the bees very well.

The second method is 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.

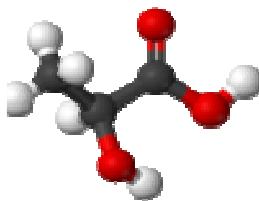
The third method is to mix the crystals with a sugar solution and apply it using the trickle method. This means using a syringe or some other small applicator with a measured quantity of solution and dribbling 5 ml per seam of bees (a seam is the gap between two brood frames where you can see the



Formic acid CH_2O_2



oxalic acid $\text{C}_2\text{H}_2\text{O}_4$



Lactic acid $\text{C}_3\text{H}_6\text{O}_3$

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 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: -

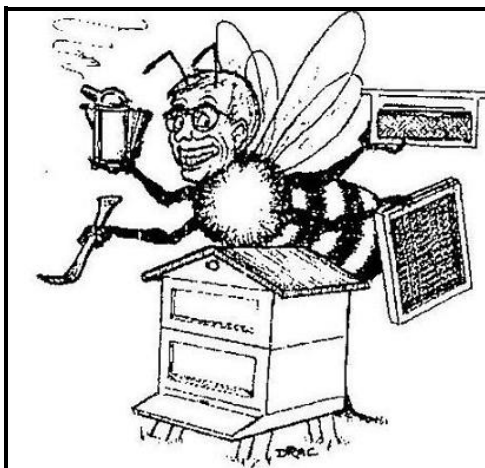
1:1 Water to Sugar (weight to volume) made into 1 litre of syrup

Oxalic acid crystals 35g

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 on 3.5g is more than a 50% increase in the dose whereas 2g out on 35g is only about 6% out on 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 baby's milk bottle - 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. There is a U Tube video of oxalic treatment by Newton Abbot BKA at <http://www.youtube.com/watch?v=Ht4hVbSraHg&feature=related>

Adapted from an article by Megan Seymour *courtesy Warwickshire Beekeeper*



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Database shows how bees see world in UV

Beekeepers and researchers are being offered a glimpse of how bees may see flowers in all their ultra-violet (UV) glory. The [Floral Reflectance Database \(FRd\)](#) was created by researchers at Imperial College London and Queen Mary, University of London. It enables beekeepers, with phot-manipulative software and some patience to manipulate the data, to "see" plant colours through the eyes of bees and other pollinating insects.

Bees have different colour detection systems from humans, and can see in the UV spectrum. This research highlights that the world we see is not the physical or the 'real' world - different animals have very different senses, depending on the environment the animals operate in," said Professor Lars Chittka from Queen Mary's School of Biological and Chemical Sciences.

"Much of the coloured world that's accessible to bees and other animals with UV receptors is entirely invisible for us. In order to see that invisible part of the world, we need this special machinery."

The researchers collected what's called "spectroreflective" measurements of the petals and leaves of a large number of different plants. These measurements show the colour of plants across both the visible and invisible spectrum. Users of the database can then calculate how these plants appear to different pollinating insects, based on studies of what different parts of the spectrum different species see.

Scientists have inferred what colours insects see by inserting microelectrodes into their photoreceptors, and by using less invasive behavioural studies. Seeing the world as insects may see it can reveal "landing strips" which are invisible to the human eye. These act to guide insects to the nectar they feed on. These landing strips might take the form of concentric circles of colour or dots.

"Quite often, you will find in radial symmetrical patterns that there is a central area which is differently coloured. In other flowers there are also dots in the centre which indicate where there is basically an orifice for the bee to put in its tongue to extract the goods."

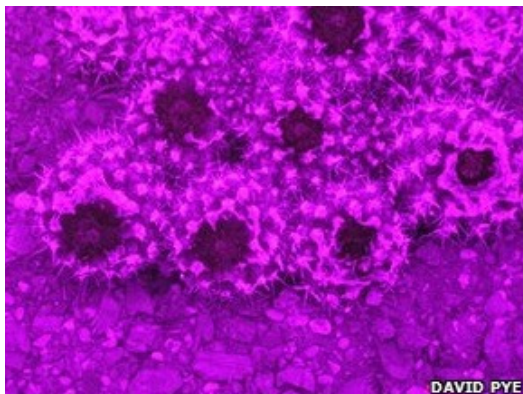
But what is the point of such a tool beyond giving researchers an insect's view? Professor Chittka says seeing these invisible colours may have commercial applications in the greenhouse and beyond.

"Every third bite that you consume at the dinner table is the result of insect pollinators' work. In order to utilise insects for commercial pollination purposes, we need to understand how insects see flowers. We need to understand what kind of a light climate we need to generate in commercial glass houses to facilitate detection of flowers by bees.

Co-author Professor Vincent Savolainen, from Imperial College London, says the database also offers us new perspectives on how plant colour evolved.



Creeping Zinnia as we see it (left) and with UV shades made visible (right). The petals appear two-toned to bees, the concentric colours drawing them towards the nectar



How a cactus appears in UV light

"We hope this work can help biologists understand how plants have evolved in different habitats, from biodiversity hotspots in South Africa to the cold habitats of northern Europe," he says. "FReD's global records may show how flower colour could have changed over time, and how this relates to the different insects that pollinate them, and other factors in their local environment."

Try it out at <http://www.reflectance.co.uk/> the results can be spectacular but be warned you will need patience.

Adapted from an article by Neil Bowdler, BBC

Swarm Collecting Rustic Style

Once upon a time, one fine sunny morning in late May, I was enjoying myself in my garden wondering if it was time to go down to go down to the pub when I heard the sound we all dread; no not the Mother in law coming to stay, worse, a swarm leaving my only hive, and it was on a double brood.

It was enormous. The sky so black with bees I couldn't afford to lose them.

I was in luck both good and bad. They settled close by in a tree. Good. 25 ft up right on the thinnest branches BAD. There's no way a ladder could reach and nothing to lean it on. So bait an empty hive, cup of tea and think.

Indian rope trick? No. (I was born north of Islamabad but never learned it)

English rope trick ? This involves throwing a weighted rope over a branch and giving a sharp tug. Usually resulting in a cut head or an overcoat of angry bees. Or both. Forget it.

The Tony Bosworth method. Lay a large sheet under said swarm. Fetch .410 shotgun, aim at branch or swarm or close ones eyes and pull trigger.

Today I am in luck. Move swarm in sheet to hive where 10,000 pairs of innocent eyes look up, say what did we do??? Point gun at swarm. Point finger at hive and, in a mad scramble like honey flowing uphill in they jolly well went.

Later the Queen went to the ball, had loads of babies and they all lived happily ever after.

This is a true story. I promise you. Although it did happen when I had long hair wore Cuban heels and flared trousers.

Warning! Don't do this unless you can't see your neighbour's house.

Tony Bosworth

Review

The Bee-Friendly Beekeeper

A Sustainable Approach

Author: David Heaf

Published by: Northern Bee Books

ISBN 978-1-904846-60-4

This book although not by the same author is perhaps best seen as a follow on from the book written by P J Chandler, *The Barefoot Beekeeper*. It gives much information on the ideology and practical techniques to be used with a top-bar hive, in particular the Warré Hive of the type currently placed in MBKA's training apiary at Gregynog. It invites the beekeeper to examine some of the accepted practices of modern beekeeping techniques.

"In recent years, beekeepers on several continents have been suffering heavy losses of colonies. If we systematically investigate factors causing the losses, we can justifiably ask whether the way in which honey bees are kept is part of the problem. Could hive design, frames, foundation, intrusion, artificial queen breeding, drone suppression, queen excluders, artificial feeding, medication, transhumance and overstocking – all elements of modern beekeeping - be reducing the vitality of bees?"

This book examines the issues surrounding these practices, drawing where possible on the primary literature in bee biology and apiculture, in order to identify an approach to keeping bees that is more appropriate. It also analyses the fundamental attitudes underlying the different ways in which we chose to keep bees"

Our "traditional" ways are only a little over a hundred years old and mankind has kept bees for many thousands of years. Honeycomb is now known to be much more than just the skeleton of the bee colony super-organism. A case is presented for making natural comb the centre of a way of beekeeping that better respects the nature of the honey bee by allowing its species specific behaviours to be expressed.

Among the hives based on relatively natural comb, the author presents the top-bar hive of Emile Warré as a practical and economical alternative to frame hives and describes the bee friendly features of it's operation. The book includes construction plans and modern tips for its management."

If the beekeepers sole intent is to maximise honey production at the expense of all else, then this approach to beekeeping will probably not appeal. If however the beekeeper has the health and welfare of the bees as a prime objective and is content to share the honey harvest with the bees then this methodology has much to commend it. In time to come the bee-friendly ethos may turn out to be the accepted way in which we are recommended, or even able, to sustainably keep bees at all – only time will tell.

I can recommend this book to any beekeeper interested in looking at alternatives to the accepted norms of modern beekeeping. It will certainly help to lift the veil of mystery and suspicion which sometimes seems to be evident when discussing the Warré hives in our club apiary, it answers almost every question I have ever heard asked about them. Definitely a recommended winter read, and who knows we might well have a few more top bar hive enthusiasts next summer.

Noel Eaton

on Nosema

Two *Nosema* species have been identified in honey bees in England and Wales, *Nosema apis* and more recently the Asian species *Nosema ceranae*. Both are highly specialised parasitic Micro Sporidian fungal pathogens. *Nosema spp.* Invade the digestive cells lining the mid-gut of the bee, there they multiply rapidly and within a few days the cells are packed with spores, the resting stage of the parasite. When the host cell ruptures, it sheds the spores into the gut where they accumulate in masses, to be later excreted by the bees. If spores from the excreta are picked up and swallowed by another bee, they can germinate and once more become active, starting another round of infection and multiplication.

Symptoms of Nosema

There are no outward symptoms of the disease. Dysentery is often seen in association with *N. apis* infections; this may be seen as 'spotting' at the hive entrance or across the frames. The dysentery is not caused by the pathogen, but as a consequence of infection and can be exacerbated during periods of prolonged confinement during inclement weather, especially during the spring. This can lead to the bees being forced to defecate in the hive, therefore contaminating it further. In Spain it has been reported that *N. ceranae*



The gut of the honeybee is shown distended due to *Nosema* infection

infections are characterised by a progressive reduction in the number of bees in a colony until the point of collapse. The beekeeper may also see a significant decline in colony productivity. In the final phase of decline, secondary diseases frequently appear, including chalk brood and American foul brood. Eventually the affected colonies contain insufficient bees to carry out basic colony tasks and they collapse. Mortality in front of the hives is not a frequent symptom of *N. ceranae* infection. Dysentery and visible adult bee mortality in front of the hives are reported to be absent in *N. ceranae* infections. Dwindling can sometimes be rapid or take place over several months. *Nosema* is readily spread through the use of contaminated combs. The spores can remain viable for up to a year, it is therefore important not to transfer contaminated combs between colonies and as always to practice good husbandry and apiary management, maintaining vigorous, healthy stocks, which are better able to withstand infestations.

Diagnosis and Treatment

The simplest method of diagnosis of infections is by microscopic examination. Both *N. apis* and *N. ceranae* can be identified in adult bee samples using a standard adult disease screen - under the light microscope the spores of *N. apis* and *N. ceranae* appear as white/green, rice shaped bodies. However, both species are virtually identical when viewed using conventional microscopy, but can be distinguished by an expert eye. However, more accurate discriminatory tests are available which detect differences between the two species using genetic methods. Currently treatment with the antibiotic Fumidil B available in the UK is an effective control against both *Nosema* species. As with all medicines ensure that the label instructions are followed.

Apologies to all those who have already read this article at BeeBase the website of the National Bee Unit www.nationalbeeunit.com . All beekeepers should be registered at BeeBase and use the facilities to get the latest informed information on bees. (Ed)

Hive Health Check List

Over the last month or two, I have had a number of calls from new beekeepers phoning to check about problems which they have encountered with their bees this season. As always, my advice is to get to know what normal healthy bees and brood look like and check if you are unhappy or not sure about what you see in your colony - quite often Sally or I will go and have a look at them with the beekeeper.

Inspecting the brood combs of a honeybee colony is the only way to determine the health and general condition of the colony. However, you have to know what you are looking at and what it means in order to make a diagnosis.

In general, a healthy brood comb simply 'looks healthy'. The brood cappings have a 'digestive biscuit' colour; the larvae are white, glistening and 'fat'. The cappings of the brood cells are uniform and the overall pattern is solid, with few holes. A good queen will start laying eggs in the lower centre of the combs and radiate out from there.

Once the oldest brood emerges, the queen lays in those cells, and the youngest brood on the comb will now be in the centre. Once the brood-rearing cycle gets underway in the spring or following the introduction of a new queen, all stages of brood should be found at each inspection.

I came across this check list recently which would be helpful when inspecting your colonies. Here are some conditions you may observe during your brood inspections and their possible causes:

No eggs, no brood present

- (a) Not brood-rearing season.
- (b) No queen.
- (c) New queen not yet laying.
- (d) Extended shortage of pollen.

No eggs, but brood present

- (a) Brood-rearing ceased - end of the season.
- (b) Queen has died or colony is preparing to swarm
- (c) Lack of pollen curtailed brood-rearing.

There will be a Seasonal Bee Inspector in attendance in the Training Apiary at Gregynog most Saturday mornings between April 16th and October 15th

(phone day before visit to check)

The SBI will be there to answer questions and show the working of the hives. This is a unique opportunity for both novice and experienced beekeepers to upgrade beekeeping skills. The apiary will be run to produce Nucs for sale at a discount to MBKA members.

A handy checklist

Test for Presence of a Queen

If there are no eggs and you can't determine if there is a queen present, put in a brood comb with young larvae from another colony. Check back in three days; if the suspect hive starts queen cells, it has no queen.

Eggs present, but no brood

Brood-rearing has just resumed after being halted for some reason.

Wet-looking pollen - in the centre of the broodnest

If there is no queen and during the off-season, pollen may be stored in the centre of the brood nest and can take on an unkempt look - wet or glazed over. When the workers anticipate needing the pollen to feed brood, they move the pollen and freshen it up and it has a dry look.

Clean, empty cells - in the centre of the broodnest

The opposite of the wet-pollen look. When the workers anticipate that brood cells will be needed for eggs, they move nectar and pollen out of the way and give the cells a polish.

Too many eggs per cell

- (a) Young, inexperienced queen, usually settles down quickly to laying one egg per cell.
- (b) Something happened to queen and laying workers developed.

Scattered brood

Same-age brood scattered over the comb, not in adjacent cells, means:

(a) A failing queen running out of sperm.

(b) Something is killing the brood. In early spring, cold nights when there are too few adult bees to keep the brood warm can result in chilled brood. Sometimes pesticides or poison pollen can cause scattered patterns.

Clue: Is only one colony showing the symptoms, or are several?

Raised cappings on worker cells

The cappings look like the ends of bullets. Cause: Drone brood is developing in worker cells, because:

(a) Queen has become a drone-layer. Usually her sperm reserves are depleted, due to her age.

(b) Laying workers; lay only infertile eggs, resulting in drones.

Raised cappings in drone cells

Normal drone brood has a 'bullet' look, but not as pronounced as when it is in worker cells. Normally, queens lay unfertilized eggs in the larger (both in circumference and depth) drone cells. These are frequently found around the bottom edges of the brood comb and in areas where the comb has been damaged. The presence of some drone brood indicates a vigorous, well-nourished colony.

Queen cells

Queen cells are constructed along a vertical plane, as contrasted with the horizontal plane of worker and drone brood cells. They somewhat resemble peanuts (in the shells).

(a) Queen cells near the centre of the comb, growing out of worker brood cells – these are replacement cells the workers have developed in emergency, loss of a queen.

(b) Queen cells everywhere, particularly near bottom of comb. This is swarm preparation - the old queen will soon depart with about half the bees (called the 'prime swarm').

Tip: For a quick check of swarm preparation, in a hive with two brood boxes, break the boxes apart and look along the bottom bars and bottoms of the combs in the top box. Most colonies preparing to swarm will show cells along comb bottoms.

Dead larvae (not white)

(a) Chilled due to cold snap (usually in spring) when there are too few adult bees to keep the brood warm.

(b) Died due to lack of care for some reason.

(c) Disease: Sacbrood, American foulbrood, European foulbrood. Call the Bee Inspector.

(d) Pesticide damage.

Mummified larvae

Older stage larvae turn white and hard. This is probably Chalkbrood.

Mouldy pollen

Soft, white stuff in pollen cells - probably due to insufficient hive ventilation.

What about mites?

After some training, you can pretty easily identify *Varroa* mites on adult bees' abdomens and on your open mesh floor tray. Also, you can uncap pupae and pull them out of the cells and check for dark *Varroa* attached to the white pupae. *Varroa* are especially attracted to drone brood and can often be found in the bottom end of the cells from which drone pupae are extracted. They may run out of the cells as pupae are being extracted.

Adapted from the Beehive, published by Northwest Ohio Beekeepers Association. Spotted by Somerton BKA.

**Incidentally the [Welsh Society of Central Ohio](#) is the most active Welsh cultural group outside Wales!
It is worth looking at their website**

Have you Paid your subscriptions for 2011?

reasurer Roy Norris is keen to get early payments as it saves a lot of administrative bother.
remember only paid up MBKA members can attend training days and go into the Apiary.

Honey Bees: Genetic Labelling Decides Blue Blood

It is hard to believe that they belong to the same species: The large, long-lived queen bee is busy producing offspring throughout her lifetime. The much smaller worker bees, on the other hand, gather food, take care of the beehive, look after and feed the brood – but they are infertile.

“The honey bee is an extreme example of different larval development,” Professor Frank Lyko explains. Lyko, a scientist at DKFZ, studies how genes are regulated by chemical labelling with methyl groups. This type of regulation is part of what are called epigenetic regulation mechanisms – chemical alterations in the genetic material which do not change the sequence of DNA building blocks. This regulation mechanism enables the cell to adapt to changing environmental conditions.

Why are cancer researchers interested in bees? *“Cancer cells and healthy cells have identical genomes, but they behave very differently. To a large extent this is due to differences in the methylation of genes. Queen bees and worker bees also share the same genome, despite all differences in appearance. Here, too, methyl labels could be responsible for different larval development,”* says Lyko.

In a beehive, it is the food alone which determines the future of the offspring: If the larvae are fed pollen, they develop into worker bees. If they are to grow into queen bees, their only food is royal jelly, which is rich in fat and protein. Australian researchers have recently imitated the effects of this power food by turning off the enzyme that labels DNA with methyl groups in bee larvae. These larvae all turned into queens – completely without any royal jelly.

This was a clear indication that it is methyl labels that determine the larvae’s fate by influencing the activity of particular genes. In their current work, Lyko and his team have investigated which genes turn a bee into a queen. While previous epigenetic investigations concentrated on the methyl labelling of individual genes, the Heidelberg researchers, jointly with bee experts from Australia, have been the first to compare methylation of the whole genomes of queens and workers. *“The bee with its small genome has served as a model for us to test the method. By now, we are able to perform such investigations also in the human genome,”* Frank Lyko explains.

Other than the richly methylated human genome, the bee genome carries considerably less methyl labels. In more than 550 genes the investigators found clear differences between worker bees and queen bees. These genes have often remained largely unchanged in the course of evolution, which is an indication for researchers that they fulfill important tasks of the cell. Moreover, Lyko’s team identified a previously unknown mechanism by which gene methylation might influence character production. In bees, methyl labels are frequently found at so-called splice sites of genes where the blueprint for protein production is cut.

If these recognition sites are made unrecognizable by chemical labels, the cell may possibly produce an altered protein with a different function. *“So far, the theory has been that methyl labels block gene activity at the gene switches and thus produce diverging characteristics,”* Frank Lyko says. *“But now we have found evidence to suggest that the mechanism discovered in bees may also play a role in cancer cells.”* This would mean that epigenetic factors in cancer not only turn genes on or off, but may also be responsible for production of proteins of a completely different kind.

Helmholtz Association of German Research Centres - spotted by *Jemima Watson, Scottish Beekeeper*

be informed, be up to date, be entertained
it must be
THE BEEKEEPERS QUARTERLY
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view a sample at <http://www.bkq.org.uk>

£26 per year from Northern Bee Books,
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The MBKA New Year/Xmas Dinner

is being held in the Music Room at Gregynog Hall.
7.00 for 7.30pm Saturday 15th January.

It was a great evening last year and this year will be even BETTER
Great Menu fantastic value

As well as **Brian Goodwin**, Chief of the Shrewsbury Flower Show
and our favourite trainer, there will be our **Bee Inspectors** in attendance,
plus the **Warden and Estate Manager of Gregynog**,
and, drawing the Raffle and generally amusing us, will be
Lembit Opik our one time MP and MBKA member.

You must book and pay by the 31st December
Details on website www.montybees.org.uk
Send cheque for £18 to Jessica Bennett
Plas Heulwen, Llanfair Road, Newtown, Powys SY16 3JY
01686 626872

The next edition of the BeeHolder is in April 2011.
Copy for inclusion should be sent, via email, to the Editor by March 16th 2011

Montgomeryshire Training Apiary at Gregynog

An oak from the Gregynog Estate has been felled. It was planked in Guisfield and cut and worked by Welsh Oak Frames of Caersws to a design developed in conjunction with the MBKA. When the weather gets better the foundations will be dug and a slab poured. Then the fun begins as the Viewing shelter is erected. We will need some volunteers to help staple to protective wire mesh to the windows: please say what times your can be called upon. We hope to have everything finished by Easter. It is amazing how fast things happen when there is enthusiasm from all parties! We really want to see school children using the Shelter during the summer term.



The first log from Gregynog being loaded. This is the first time for about 100 years that an Oak from the Estate has actually been used for a Gregynog Building



The Bee-Viewing Shelter. The slates will be much smaller than shown in this schematic

Looking from the south through the entrance of the hut.



The Boss which holds the bracing horizontals and the rafters together. See upper centre of schematic to left



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