THE LEEDS BEEKEEPERS ASSOCIATION
BRANCH OF THE YBKA
AFFILIATED WITH THE BBKA

"The Leeds Beekeeper"

INDEX

Keeping an eye on your bees?

Well when it comes to skep making it is definitely more of a marathon than a sprint..... A full day resulted in half a completed skep and at the time of writing, more straw needs to be stripped before the second half can be completed. So that will be about 20 hours for a complete skep – hope there are plenty of swarms this year.....

CHAIRMAN'S NOTES

Hello I hope you are all well and your bees are even better. At last the days are getting longer not by much but it is now noticeable. We have had some silly weather over the last couple of weeks very mild on certain days, mild enough for the bees to be flying, followed by some cold snaps.

When snowdrops crocuses and hazel come into flower and there are a few hours of sunshine the foragers will get busy. Watch the hive entrance and it soon becomes evident if any colony is in trouble activity is greatly reduced. However, do not dive in immediately because some colonies will be a little slower than others.

Hefting or checking the weight of the hive tilting it forward from the back or side should tell you if the colony is short of stores. If you feel it is light put some fondant on but if you left your colony with plenty of stores in the autumn this should not be a problem in February. You may notice on the ground below the entrance there will be a number of dead bees, up to 100 is normal and is the result of the winter bees dying inside the hive and then being ejected as the weather gets warmer so don't be alarmed.

February is a quiet month for the beekeeper so if you have a shed get into it and start getting your equipment ready.

Regards Duncan

BULK HONEY AVAILABLE

Roll up, roll up! LBKA have approximately 100 lb of Summer honey available to buy in bulk at a cost of £3 per lb, ready to be put into jars. If anyone is interested in this, please speak to Duncan or David in the shop.

SPRING CONFERENCE

The YBKA Spring conference will be held at Manor academy in York on Saturday 24th March 2018. The cost is £20 for the day if you require lunch and £10 if you bring sandwiches. Please see the attached flyer for more details and booking form for those who wish to attend.

SKEP COURSE

All bathing suspended – straw soaking

It all began in November when Dave Barrett handed all the course attendees a large bushel of "special straw". Average run of the mill straw isn't good enough for a skep, long straw is needed. Having spent what seemed like forever in advance of the course stripping leaves off straw and cutting the head off every piece, it was then deposited in the bath overnight for a good soak.

An early start to Scholes, together with prepped straw, a bucket and a bit of snap (that is lunch, as described by Jim Pearson, for those from beyond the Yorkshire borders).

First job was to get the cane soaking to make it suppler, whilst having a chat with Jim and a cup of coffee to counteract the early start.

Skep under construction

Jim and Geoff spent time with everyone to ensure we all received one-to-one attention to get our skeps started. This, by all accounts, is the hardest part of skep making, so all assistance was gratefully received.

By the time the second wave of students arrived, the 'early birds' were getting on very well with their straw, it seemed to be bending in the direction we wanted. There were a few laughs along the way, and a few chocolate biscuits! Skep making was clearly a high-tech activity requiring the use of a bottle top to ensure the correct thickness of coil was maintained. Once the skep was around 40 stitches around the diameter, the top was wide enough and the stiches can be angled to gradually introduce the curve to turn from the top to the

sides. Once the turn is complete stitching continues until the skep is the desired size – depending on how large a swarm you intend to apprehend.

Clearly the arrival of various people clutching bundles of straw and buckets had piqued the interest of the natives and thus a couple who had been running an archery course across the street popped in to see what was going on.

By the end of the day everyone had a skep progressed to some stage, to be finished at home. Beer mats and a bit more. Jim was of the opinion that we had more than enough straw for two skeps. Swarms beware!

An excellent day all round and everyone enjoyed themselves. A big thank you to the Pearson brothers for their excellent tuition and endless patience. And a thank you to Dave Barrett for organising the day.

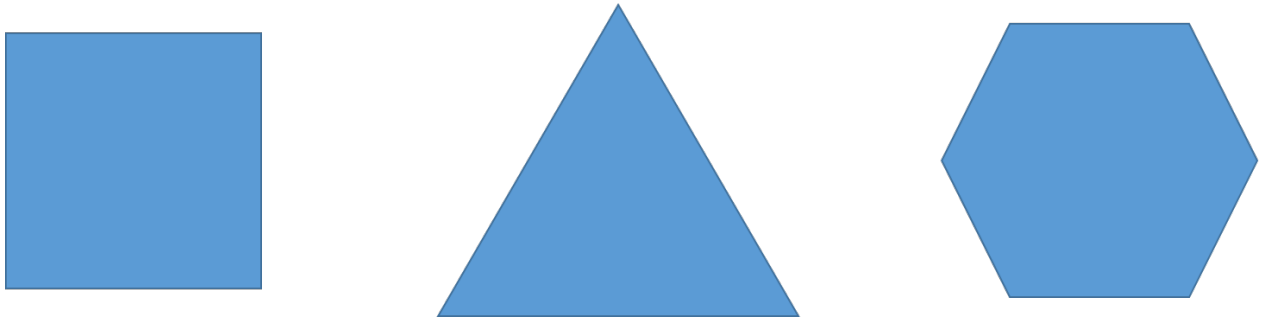
Helen Lowry

Skep under construction

BUT WHY NOT A TRIANGLE?

Bees produce hexagonal cells to store honey and rear their brood in. Obviously hexagons tessellate quite nicely and don't result in any lost space (as would happen if cells were circular), but why aren't they square or triangular – they tessellate too...

Imagine we have a square with sides of length 1 unit long, the area of that resultant square would be 1 square unit and the perimeter would be 4 square units. To make an equivalently sized triangular cell (equilateral triangle for tessellating ease) would lead to a perimeter of 4.24 units. For a regular hexagon, the area is equal to $\frac{3}{2}\sqrt{3}a^2$ where a is the side length. Thus for a regular hexagon with area of 1 unit, each side would be 0.62 units long and the resultant perimeter would only be 3.72 units.



A square, triangle and regular hexagon of equal 1 unit area with perimeters of 4, 4.24 and 3.72 units respectively.

For the bees this means that using a regular hexagon as the shape of the cell leads to the greatest cell area with the least amount of wax used. This concept was first proposed by Marcus Terentius Varro in 36 BC and challenged the established thought at the time that cells were hexagonal as bees have six feet. It wasn't until 1999 that Thomas Hales managed to prove mathematically that a hexagon is in fact the most efficient shape and thus Charles Darwin when he wrote that honeycomb is "absolutely perfect in economising labour and wax."

https://arxiv.org/pdf/math/9906042.pdf

BEE THEFTS AND VANDALISM

Some of you may have seen recently in the local press the theft affecting a member of Bradford Beekeepers. Paul Seage had put some fondant in his beehives and went back to check on them two weeks later to find the bees were missing.

> *"I then went back to check fondant levels about two weeks later, and upon opening one of the hives I found no bees inside, only to find that there were six missing frames. This was the same for all my other hives."*

Clearly this must have been a planned attack by someone with beekeeping knowledge as the bees and six frames from three of the four hives had been removed – presumably placed in boxes brought along by the culprit. It also means at this time of year when the bees are not flying as the hive was left intact you may not notice this type of theft straight away.

In fact it is hardly surprising that thefts are on the increase as a dramatic increase in colony value has been seen in the last ten years as the hobby has gained in popularity. West Mercia and Lincolnshire are the bee theft capitals of the UK with 14 hive thefts reported in the last 7 years. So BeeWare, there are bee thieves operating in the area!

http://www.thetelegraphandargus.co.uk/news/15894489.Thousands_of_bees_worth___600_stolen_from___39_gutted__39__Bradford_beekeeper/

A scene of destruction © Wild Hill Honey

Meanwhile across the pond two youths have been arrested following the senseless vandalism of a commercial beekeeper's apiary towards the end of 2017. Wild Hill Honey farm suffered damage to fifty hives, leading to the loss of half a million bees who froze to death in the cold temperatures and at a financial cost of over £43,000.

http://www.bbc.co.uk/news/world-us-canada-42730201

EYE CAN SEE YOU

'I've got my eye on you!'

Five eyes?! It is no wonder the bees know you are coming. Well five isn't strictly true, more like two and three light detectors but bees are still remarkable.

Humans are trichromic (tetrachromic in some ladies) meaning they have three distinct types of photoreceptors red, blue and green. In contrast bees have ultraviolet, blue and green photoreceptors meaning they cannot distinguish red (maybe red should be the beekeepers' suit of choice?).

Dr Karl von Frisch first described the nature of colour vision in honeybees more than a century ago in 1914. His simple experiment placed a dish of sugary water on a coloured card and he trained a group of honeybees to associate food with that colour. The same card was then placed amongst a group of grayscale cards, the idea being if the bees could distinguish the colour card, only that card would be visited otherwise the bee would only see grey cards and thus visit multiple cards.

'Ocelli' is derived from the Latin word ocellus and means little eye. Honeybees have three ocelli, located in a triangular shape on the rear of a bee's head. In the queen and workers the three ocelli are on the top of the head, centred between the two compound eyes. In contrast in a drone, the three ocelli are just in front of the area where the compound eyes meet. (There is something to have a look for in the Spring) These ocelli have a single lens and do not form an image instead acting as a photo receptor, allowing the bee to detect changes in light intensity and direction. It has been shown experimentally that ocelli help honey bees to navigate whilst flying. When bees had their ocelli covered their photokinetic responses were greatly increased. This was shown by switching a side light on, bees with normal ocelli responded by reducing their flight speed and direction. In contrast those with occluded ocelli took much longer to respond.

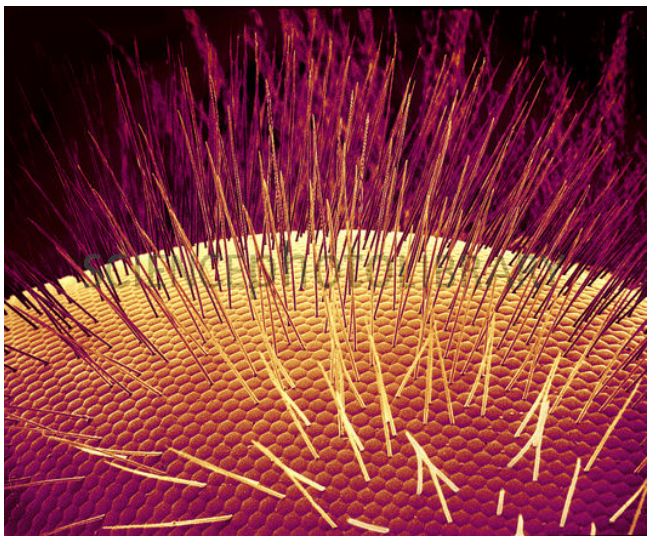
'The same room, illuminated with different spectral light combinations © Phillips

Relative total number of photons reflected by Gazania rigens illuminated by daylight-type radiation (xenon source). Outlined area I shows the effect of long wavelength-rich, low colour temperature illumination and outlined area II shows short-wavelength, high colour temperature illumination

Another aspect of ocelli is that it allows the honeybee, and insects more generally to sense the length of daylight. Ocelli are much more sensitive to light than compound eyes making them ideal light meters. They have two different photoreceptor classes with peak absorption at 335–360 and 499–500 nm. Depending on the time of day the spectral power distribution (SPD) of daylight changes, thus as humans, if we were to look at a sunflower first thing in the morning, at midday and again at dusk, each time the same sunflower (or *Gazania rigens*) would look a slightly different colour. The same happens when it comes to decorating – you select the shade of paint you want under the harsh fluorescent lights of the local DIY store, slap it on your walls, turn on your energy saving bulbs and think "I don't remember it looking that colour in the shop". Well bees are able to compensate for SPD using their ocelli such that morning, noon or night, that yellow sunflower looks just the same (and no matter what time of day the magnolia walls look well erm... magnolia.....)

So what can a bee see? Recent research from the University of Adelaide has shown that bees can clearly see an object 1.9º that is the equivalent to something the width of your thumb at arm's length. The smallest object they can detect is a third of your thumbs width at arm's length. This is quite amazing visual acuity for something with a brain only 1 mm^3, consisting of 950,000 neurons.

Humans can detect movements separated by $1/50^{th}$ of a second, bees are six times faster than that, able to detect movements separated by $1/300^{th}$ of a second – have you ever tried sneaking up on a bee? Their two large compound eyes consist of 4000 - 5000 facets known as ommatidia arranged on the convex surface of the eye. Each ommatidia is hexagonal in shape and consists of a cornea, pigment cells and 9 long thin photoreceptor cells. It provides one image to the brain which is processed into the complete picture the bee can see, thus an ommatidia can be considered as a pixel. Drones



Colour scanning electron microscope of the compound eye of a honey bee (Apis mellifera). Protective hairs cover its surface. The eye consists of many hexagonal facets known as ommatidia.

© Susumu Nishinaga/Science Photo Library

A silverweed flower as we would see it, and the same flower in the UV spectrum, notice the 'bullseye pattern'

have much larger eyes with 7000-8000 facets – ideal for queen spotting to fulfil their primary function. Queens in contrast have smaller eyes with around 3500 facets. At the junctions between ommatidia is a small hair, it is believed that these hairs enable bees to detect wind direction and the flight speed of the bee.

There are three distinct types of ommatidia; type I ommatidia contain one ultraviolet and one blue receptor(known as a rhabdomere), type II ommatidia contain two ultraviolet receptors, and type III ommatidia have two blue receptors. All the three types contain six green receptors. The three ommatidia types appear to be distributed randomly over the retina in the ratio 44:46:10 (type I:II:III). A collection of these rhabdomeres is known as a rhabdom. These are actually twisted along their length meaning that they are insensitive to polarised light.

However, around the peripheral back rim of the eye is a narrow strip of straight, untwisted rhabdoms, these enable honeybees to do something humans can't; detect polarised light. This means that honeybees are able to detect the pattern of polarised light within the sky, and subsequently determine the position of the sun, even on a cloudy day.

A honeybees' ability to detect UV means that they do not observe flowers in the same way that we do. Red flower? What red flower? To a bee that is black. By the same token a simple yellow flower like a silverweed or an orange calendula looks very different to a bee, with a strong 'bullseye' pattern in the centre due to the bees' sensitivity to UV wavelengths. This provides a target for the bee to aim at that contains the nectar and pollen the bee seeks.

For an idea of what a bee can see please visit Andy Giger's site

http://andygiger.com/science/beye/beyehome.html
Please note that the colour vision of bees is not taken into account in this site.

To see what a range of flowers look like in the UV spectrum please see the website of Bjørn Rørslett

http://www.naturfotograf.com/index2.html - select UV colour from the side menu.

NEVER MIND FAKE NEWS, WHAT ABOUT THE HONEY?

The real deal?

There is one top ten list which no food stuff wants to appear on and that is the "Top ten most counterfeited food items", of which honey occupies sixth spot (olive oil occupies gold medal position). The EU have a wonderful definition of honey; "the natural sweet substance produced by Apis mellifera bees from the nectar of plants [...], which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in honeycombs to ripen and mature", really makes you want to spread it on your toast! So how can you fake honey? Well we aren't talking bees in overcoats down the Dog and Duck with a few dodgy jars to sell!

As Europeans we eat more honey than we make meaning Europe needs to import about 300,000 tonnes annually and it turns primarily to China to bridge the shortfall. Honey is big business, worth nearly $300 million to the Chinese economy alone in 2017. Between 2000 and 2014 China's honey production increased by 88% to meet the strong rise in exports, whilst honeybee hive numbers in China only increased by 21%. Now either that means the bees were doing some serious overtime or a bit of skulduggery was afoot. Unripe honey is harvested, with a much higher water content than is legal, it is then artificially dried, filtered to remove any residues. Further filtering can be undertaken to remove pollen if masking the country of origin is important. Sugar syrups can be added in order to meet the different market prices.

However, China is not unique, during the time imports from China have been rising, exports from some member states have also seen a similar rise. In this case 'cheap' Chinese honey is imported to an EU member state, then rebadged as produce of that country, perhaps even with a sprinkling of local pollen for authenticity along the way.

The obvious fakery is Manuka honey – the UK imports more Manuka honey annually than is produced globally..... and the reason is obvious; the high price point of Manuka. Monofloral honeys attract a premium and thus attract the attention of the honey fraudsters.

Furthermore, you can guarantee that the large honey producers who are selling honey will make sure they are playing to the limits. Water is much cheaper than honey so if 20% water is allowed in the rules, then 20% water it shall have.

So next time you are buying honey from the supermarket take note of the labels; "blend of EU honeys", "blend of non-EU honeys", "blend of EU and non-EU honeys" and wonder what is actually in the jar?!

IS THAT A BEE IN YOUR VEST?

Another one for the "Don't try this at home" category as an Indian beekeeper has a novel way of collecting bees; sticking them up his jumper (well vest in this case but I think you get the idea). The first time he tried this he got very badly stung, but undeterred he persisted with the method and now he doesn't even feel the stings.

So the next time you need to collect thirty bees for a nosema sample, just stick them in your vest..... what could possibly go wrong.....

http://www.dailymail.co.uk/news/article-5282997/Honey-collector-fills-bees.html

RESIST THE TEMPTATION

What are your ladies up to?

As the weather begins to warm it is always tempting to start having a peek into your hive to see what is going on, resist! (unless you are applying a varroa treatment) At this time of year have a heft to check for sufficient stores, an ear against the side of the hive will let you hear the hum of the colony as they try to maintain 35ºC. If it is a particularly warm day and bees are out on cleansing flights or perhaps taking advantage of the local snowdrops or crocuses, that will give you the reassurance you need that the bees are still alive, but beware your washing!

Foragers returning laden with pollen also indicates that the queen is laying and new bees are being raised for the year ahead. Debris on your hive floor indicates the location of the cluster and gives an idea of size, along with an idea of varroa levels. The sight of white wax flakes amongst this detritus is also a good sign, suggesting that larval cells are been capped.

BEE EQUIPMENT FOR SALE

A long term overseas move forces us to give up beekeeping and thus we have the following for sale:

2 hives (no bees) each comprising

Roof, crown board, queen excluder, 1 super + frames, 1 brood box + frames, floor.

Accessories

Food grade buckets, 2 plastic contact feeders, rhombus clearer board, a collection of 22 super frames, 2 supers with frames, pens, nails etc.

£50 each hive. Accessories negotiable.

Ann & Peter Chamley, Meanwood, Leeds LS6 contact (ann_chamley@yahoo.co.uk)

IS THERE ANYTHING YOU CAN'T PUT HONEY IN?

Wednesday 31st January saw our first honey food and drink evening and in true British style there was enough food to sink a small battleship with a plethora of regional cuisine on offer. There was a good mixture of sweet and savoury dishes and we hope members enjoyed the dishes (and drinks) on offer. Many thanks to those members who contributed to the evening.

So in answer to the question "Is there anything you can't put honey in?" It would appear not!

Ask The Beekeeper

Have you got a burning beekeeping question that you want an answer to? Then please send it to editor@leedsbeekeeper.org.uk and we will do our best to find you an answer!

12OZ HEXAGONAL JARS

Hopefully your bees have been busy and you now have lots of honey and not enough jars to put it in.... fear not LBKA have the answer! 12oz (340 g) hexagonal jars with lids are available in the shop at a bargain price of 23p each, they come loose so you can buy as many as you require. Please bring a cardboard box to carry them home in. If you require a large quantity, please email Duncan thebeeman@hotmail.co.uk or ring him on 07855 308143

Got an article for the next edition? Please email to editor@leedsbeekeeper.org.uk by 28th February.

FORTHCOMING EVENTS

February

Saturday 10th - Apiary Day – 10.00 a.m. – 12.00 noon

Saturday 24th - YBKA Annual Spring Delegates Conference

Wednesday 28th – Winter talk – Dr Sophie Everson – Trouble shooting in queen rearing and recent advances in chalkbrood research.

March

Saturday 10th - Apiary Day – 10.00 a.m. – 12.00 noon

Wednesday 28th – John Chandler – Pollen in Honey