

January 2016

BUZZWORD

Ayr & District Beekeepers Monthly Newsletter



IN THIS ISSUE:-

- President's Message
- The Science Behind Honey's Eternal Shelf Life
- What to do in February
- Good Practice to Reduce the impact of pathogens
- Sexual rebellion and murder among the bees



President's Message

We have had a stormy start to 2016 and I hope your hives have weathered all the gales so far. At this rate, the weather forecasters will have run through the alphabet by the start of spring.

As ever we are putting together a busy programme for the coming year and the committee is now focussing on plans to celebrate our centenary in 2017. Any suggestions will be very welcome. Many of us are using fondant at this stage to see our colonies

through the rest of the winter and Tony has a plentiful supply out at Minishant if you need any. (See the website for details.)

Keep hefting.

Best wishes.

Alan

Club President

The Science Behind Honey's Eternal Shelf Life

Modern archaeologists, excavating ancient Egyptian tombs, have often found something unexpected amongst the tombs' artefacts: pots of honey, thousands of years old, and yet still preserved. Through millennia, the archaeologists discover, the food remains unspoiled, an unmistakable testament to the eternal shelf-life of

UPCOMING EVENTS:-

Wednesday 24th
February
Louise Bustard –
Plants that Heal
Kyle Academy, Ayr
7:30pm

Beginners Classes
start 30th March, See
poster at end of this
issue for details.

honey.

There are a few other examples of foods that keep indefinitely in their raw state: salt, sugar, dried rice are a few. But there's something about honey; it can remain preserved in a completely edible form, and while you wouldn't want to eat raw rice or straight salt, one could dip into a thousand year old jar of honey and enjoy it, without preparation, as if it were a day old. Moreover, honey's longevity lends it other properties—mainly medicinal—that other resilient foods don't have. Which raises the question—what exactly makes honey such a special food?

The answer is as complex as honey's flavour—you don't get a food source with no expiration date without a whole variety of factors working in perfect harmony.

The first comes from the chemical make-up of honey itself. Honey is, first and foremost, a sugar. Sugars are hygroscopic, a term that means although they contain very little water in their natural state they can readily absorb moisture if left unsealed. As Amina Harris, executive director of the Honey and Pollination Center at the Robert Mondavi Institute at University of California, Davis explains, "Honey in its natural form is very low moisture. Very few bacteria or microorganisms can survive in an environment like that, they just die. They're smothered by it, essentially." What Harris points out represents an important feature of honey's longevity: for honey to spoil, there needs to be something inside of it that can spoil. With such an inhospitable environment, organisms can't survive long enough within the jar of honey to have the chance to spoil it.

If you buy your honey from the supermarket, that little plastic bottle of golden nectar has been heated, strained and processed so that it contains zero particulates, meaning that there's nothing in the liquid for molecules to crystallize on, and your supermarket honey will look the same for almost forever. If you buy your honey from a small-scale vendor, however, certain particulates might remain, from pollen to enzymes. With these particulates, the honey might crystallize, but don't worry—if it's sealed, it's not spoiled and won't be for quite some time.

A jar of honey's seal, it turns out, is the final factor that's key to honey's long shelf life, as exemplified by the storied millennia-old Egyptian specimens. While honey is certainly a super-food, it isn't supernatural – If you leave it out, unsealed in a humid environment, it will spoil. As Harris explains, "As long as the lid stays on it and no water is added to it, honey will not go bad. As soon as you add water to it, it may go bad. Or if you open the lid, it may get more water in it and it may go bad."

So if you're interested in keeping honey for hundreds of years, do what the bees do and keep it sealed – a hard thing to do with this delicious treat!

Read more: <http://www.smithsonianmag.com/science-nature/the-science-behind-honeys-eternal-shelf-life-1218690>

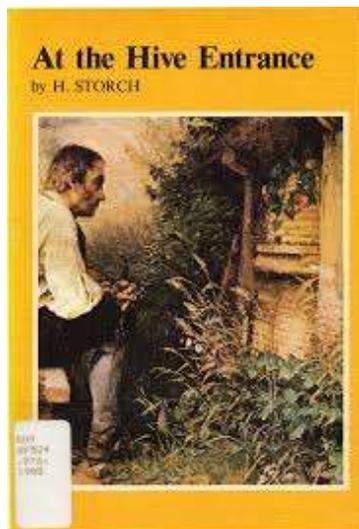
What to do in the apiary in February

- This is one of the few months of the year when there is little reason to go into your hives unless you suspect that they may be short of food and need fondant adding/replacing. (And of course checking they haven't blown over or floated away!)
- In most areas, the queen will be starting to lay and the colony will have an increased need for food. As it was fairly mild in December, with bees flying at various times during the month, the bees may well have consumed quite a lot of stores. I notice that, under my hives, there are significant signs of uncapping - showing that stores are being consumed.
- If you are using small entrances and there are no signs of bees flying in milder weather, check the entrance isn't blocked with dead bees by gently poking a stick in the entrance. You can check your colony is alive by putting your ear against the brood box – you can

usually hear the bees buzzing.

- It's a good time to clean up the apiary and sort out equipment. If you have a suitable dry, warm place to work, it's a good time to make up all those new frames so that you are ready to replace old brood frames, do artificial swarms and have plenty of supers ready for all that honey.
- It's also a good time for reading or studying for modules and for making wax blocks and candles etc.! A recommended read is "At the hive entrance" by H. Storch, which discusses what you can tell about what is happening inside the hive by observation from the outside. It can be downloaded for free from:

http://www.biobees.com/library/general_beekeeping/beekeeping_books_articles/At%20the%20Hive%20Entrance.pdf



QUESTION OF THE MONTH:

What do you call both a honeybee and bumble bee virgin queen?

LAST MONTH WE ASKED

Name the US beekeepers who in 1875 is credited with designing the first handheld smoker that incorporated bellows?

The Answer – Moses Quinby

Good practice to reduce the impact of pathogens

Talk to the club by Graeme Sharpe SRUC on January 27th 2016

1. Basic Hygiene

- Wash suits regularly
- Use disposable gloves – over leather if bees are tetchy.
- Take a bucket of 10% soda crystal solution when inspecting the apiary, to clean tools between hives.
- Take a bucket for brace and burr comb.
- Inspect one hive at once and have it open for as short a time as possible. Have a clear idea of the purposes of the inspection.
- In winter placing hives so that they get some sun allows the bees to take cleansing flights.
- Try not to squash bees as this spreads nosema.
- Don't feed honey to hives.
- Prevent robbing by reducing entrances, not leaving hives open, or comb etc. around for bees to clean up.
- Don't use old comb from doubtful sources.
- Quarantine swarms.
- Clean hive floors with soda and scorch boxes.
- Autumn or early spring, sterilise drawn comb with acetic acid. Stack brood boxes on bare ground. Beebase has an information sheet on how to do this. Acetic acid is good at dealing with wax moth, nosema and chalk brood.

2. Replacing comb

Regular replacement of comb reduces the chemical load as well as the pathogen load. It can be done in several ways:

- Shook swarm
- Replacing single frames with foundation
- Replacing single frames with clean, drawn comb.
- Bailey comb change.
- Artificial swarm.

Shook swarm is used for treating EFB and can be used for varroa/replacing comb but because of the loss of brood, it is not a good method to be used in the short Scottish season. If you do a shook swarm do not feed the bees for 24 hours so that they empty their gut contents making comb and reduce pathogens in their guts.

Shook swarm and Bailey comb change are described on Beebase and various YouTube videos. If doing a Bailey comb change use a contact feeder rather than a rapid one.

3. Other factors

- Summer management – controlling swarming; monitoring stores; monitoring varroa and treating promptly if levels rise.
- Breeding from good queens and culling bad colonies.



Jane Sik

Sexual rebellion and murder among the bees

Scientists revealed the trigger that can plunge a colony of obedient and sterile worker bees dutifully serving their queen into a chaotic swarm planning sexual rebellion and regicide. It's in the beeswax, according to a study published in the British journal Royal Society Open Science.

Biologists have long puzzled at what, exactly, tips the ordered world of many social insects—rigidly divided by caste, function and hierarchy—into a murderous mayhem of sometimes Shakespearean dimensions. In this case, the actor subject to observation and experimentation was *Bombus terrestris*, more commonly known as the buff-tailed bumblebee. In its steady-state "social phase," a bumblebee colony is a paragon of efficiency that would make Amazon's Jeff Bezos green with envy. "Workers and the queen usually just attend to their tasks peacefully," explained Anne-Marie Rottler-Hoermann, a researcher at the Institute of Evolutionary Ecology and Conservation Genomics in Ulm, Germany, and lead author of the study.

The workers—always female—focus selflessly on foraging, taking care of the brood, nest-keeping and maintaining defences against potential aggressors. The queen does what queens do: allows herself to be pampered and fed by her offspring, while she lays eggs to produce more workers and the occasional male that may later mate with a virgin queen.

Males are otherwise pretty useless. They play no role in the life of the colony, which they abandon shortly after emerging. Born in the late summer, when most of the nectar-rich flowers are gone, these wandering Lotharios usually die within a few days. This clear division of labour and absence of sexual conflict "can be considered the main reason for the great evolutionary and ecological success of social insects," Rottler-Hoermann said.

With bumblebees, a typical colony—which has a life-cycle of less than a year—will grow to

accommodate 150 workers and one queen. But at a certain point something snaps, and the clockwork cooperation comes to an end.

The transition to the "competition phase" is quick—and sometimes brutal. "It is a total behavioural change in the whole bumblebee colony from one day to the next," Rottler-Hoermann told AFP. Suddenly agitated, the bees run around attacking each other, sometimes ripping open egg cells to kill the eggs inside. "Aggression is so pronounced that it can even lead to the death of the queen," she added.

Experiments have shown that the presence of a queen enforces sterility among workers. But as the colony matures these rank-and-file bees, in an act of defiance, lay eggs anyhow. Unfertilised, they yield only males with a single set of chromosomes. The queen, who mated before founding her colony, has stored sperm from that union, allowing her produce both female and male offspring. Earlier research has pointed to the size of the colony as the trigger for the violent undoing of the social order. But the new study, in a set of clever experiments, showed it was subtle changes in the chemical composition of wax in the nest that unleashed aggression.

When exposed to wax from a colony in the end-game phase, workers from a newly established nest "start to compete for reproduction," the study showed by way of proof. Even when a fertile and active queen came into the picture, the wax still trumped her influence, it was found.

From - <http://phys.org/news/2016-01-sexual-rebellion-bees.html>

And you thought you were being eco friendly!

Research at John Moores University in Liverpool suggests that there may be a threat to bumblebees from biological pest control products using nematodes eg for slug control. It was found in tests that the nematodes killed up to 80% of bumblebees exposed to treated soil within four days

Reference: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4655097/>

You're worrying about the wrong bees

Research shows that honeybees weren't affected by neonicotinoid seed treatments. But wild bees were affected, and in a big way. Wild bee density in the treated fields was half that of the untreated fields. Bumble bee colonies grew more slowly, and produced fewer queens. Solitary bee nests disappeared from the treated fields completely.

Solitary bees are the most common type of wild bee; they don't live in a hive. A female bee usually makes a hole in the ground or in a hollow stem, where she lays her eggs and then provisions

each grub with a ball of pollen to snack on after they hatch. They are the ultimate single mothers. In this study, no mason bees (*Osmia bicornis*) began brood cells in the seed treated fields. None.

After several years of intensive research on honey bees and colony collapse disorder, we know a lot about what kills honey bees. We don't have that broad knowledge base for our native bees. We don't even know what is a lethal dose of pesticide for many solitary bees.

From - <http://www.wired.com/2015/04/youre-worrying-wrong-bees/>

Oxalic acid treatment

There is an interesting powerpoint presentation about this on the scientific beekeeping website: <http://scientificbeekeeping.com/oxalic-acid-powerpoint-presentation/>

Bumblebees deployed to deliver pesticides to crops

Bee Vectoring Technologies (BVT) in Mississauga, Canada, has opened a commercial production plant this month in the hope that the tactic will lure farmers away from indiscriminate crop spraying.

The idea involves placing a tray of organic pesticide powder inside a commercially bred hive. The powder contains a substance to help it stick to bees' legs and a strain of *Clonostachys rosea* fungus that is harmless to these insects but attacks crop diseases and pests. The bumblebees walk through the powder as they leave the hive. When they land on flowers to gather nectar and pollen, they leave a dusting of pesticide to protect the plant and future fruit. Many crops can be protected this way, including blueberries and bell peppers.

David Passafiume, an organic farmer near Toronto, has been using the system for five years on 8.5 acres of strawberries and raspberries. "We were losing a significant portion of our crop each year to *Botrytis* and tarnished plant bugs," he says. Now those losses are negligible and profits have gone up by a quarter, he says. "I wouldn't even try to grow without it now."

Jeremy Kerr, a biologist at the University of Ottawa in Canada, thinks it should only be used inside greenhouses, away from wild bees. If used outside, he says, it could have unintended effects on non-target plants or other pollinators.

From - <https://www.newscientist.com/article/bumblebees-deployed-to-spray-crops-with-pesticides/>



Some Jokes to Lighten the Mood



Picture of the Month
Bee Covered in Pollen



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Ayr & District Beekeepers' Beekeeping for Beginners'



Learn how to look after bees

Theory and practical sessions including visits to our club apiary. Full protective clothing will be provided at these visits.



Sessions 1 & 3

Wednesdays at 7.00 for 7.30pm
at Kyle Academy, AYR. KA7 3LR

Session 2 at Carrick Centre (see below)

30th March 2016 - Lifecycle of the honeybee, bumble bee and wasp

6th April 2016 - Equipment used in beekeeping - Carrick Centre
Maybole KA19 7DE 7.30pm

13th April 2016 - The Beekeeping Year



Sessions 4-6

Saturdays at 11.00 -12.30 at Carrick Centre, Maybole KA19 7DE
and Club Apiary 1.45 - 4.00pm

(Lunch can be purchased at the centre but is not included in cost)

16th April 2016 - Basic Information about opening a hive.

Visit to club apiary in the afternoon.

23rd April 2016 - All about Swarming. Visit to club apiary in the afternoon.

30th April 2016 - All about pests and diseases. Visit to club apiary in the afternoon.

Course fee £70 if paid before the 4th March, £80 thereafter.

Includes membership of Ayr & District BKA and **ALL** meetings for 2016.

To enrol for the course contact

Mrs Lindsay Baillie (secretary) 01292 570659

or

You are welcome to turn up on the night!

