



Beetalk September 2016

General info and news about bees

Hello and welcome.

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

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

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

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

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

Hope you enjoy.

Editor

If you have any articles that you think may be useful to have included in Beetalk.

Please e-mail them to the editor

at

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USES OF BEESWAX

What did you do bonfire night this year? I went along to the monthly meeting of the Nottingham Region and listened to Bob Logan describe what he does with the beeswax he takes off the hive. It's thanks to Bob that I first learnt how to clean and use my own wax and it was encouraging to see so many people taking note of what he and others had to say.

Beeswax is a valuable and luxury product. Your bees need to eat eight pounds of honey for every pound of wax they produce. They produce it in tiny white scales and mould them together to form comb. Approximately half a million scales are needed for every pound of wax. I believe we should all value it.

Not every beekeeper is interested in using wax but everyone could salvage it. If you don't want it yourself, give it to someone who does or exchange it for foundation. My interest in candle making goes back a long way. Some of you may remember the "Three Day Week" of the early seventies. I was at school then and supplemented my pocket money by making and selling candles. The beeswax candles I sell now are much more superior. It's the wax, not my skill. Beeswax really does make the best quality candles and Bob showed how easy they are to make although I would recommend priming the wick which he does not, I do it for three reasons. Firstly it makes the wick easier to thread into the mould.

Secondly, if the candle is going to be burnt, it slightly improves the burn quality, especially when the candle is first lit. Thirdly, if the candle is to be kept as it is, unprimed wick will fray and spoil the look. It's very easy to prime wick. Just drop it into your molten wax for a short while then pull it straight. A few months ago I started to use beeswax in cosmetics. As Bob pointed out, you do need a safety assessment for these products before you sell them.

This isn't too difficult to get. Mine came via Dr Sara Robb and cost just under £200. The biggest problem I had was understanding the labelling regulations! W J I I W 713 Making soap can be dangerous. My first attempt came after attending one of Sara Robb's workshops at the national conference. You need to make a caustic solution or "lye" – don't go near the fumes. Then you whisk this with fatty oils to start a chemical reaction. Yes, you whisk and yes, it can splash. For days afterwards I went round with a bright red sore on the bridge of my nose from a tiny splash. Since then I always wear goggles for soap making. There are many recipes around in books and on the Internet. Some are easier to make than others. I still use one of Sara Robb's. My best selling beeswax product is also a cosmetic, this one very much my own recipe. It was great fun researching other peoples' recipes and trying out different ideas.

The idea originally came from seeing Apicare's 'Intensive treatment hand creme with manuka honey'. My intensive moisturiser isn't priced anything like the same and sells in Thornes mini plastic pots. If you think you might like to have a go at making candles or cosmetics, I recommend you do. You don't need a safety assessment for anything you use yourself, but do think about your own safety. Talks like Bob's and workshops like Sara Robb's are an excellent way of finding out more. There's always plenty at the Convention in April and the National Honey Show in October.

Got to go now. There's wax melting in the oven...

LOTS OF BEEHIVES

The world has a host of Beehive Hotels.

There's one in Rome, another in Saskatchewan, Canada,
one in the Maldives and at least a couple in rural NSW.

And most of us would know the local version the Beehive Hotel in Barkers Road, Hawthorn.

But the original Beehive Hotel (sic) is in Grantham, Lincolnshire where it has been in business on the same site since about 1550. It is so named because throughout its life it has had a live beehive which is situated just above the pub's advertising sign. Although it is now apparently part of a much larger real ale pub chain the management goes to great lengths to ensure that the solitary hive which gives the pub its name is carefully looked after and is rightly the landmark and talking point for patrons that it should be!



HOW MUCH LAND TO FEED ONE BEE COLONY?

Johnson, Catskill Mountains BKA (Members will have to “translate” this for UK conditions) conventional “wisdom” suggests that to nourish one colony of honeybees it takes at least one acre of blossoming trees, shrubs or flowers to thrive. No one really knows for sure and of course there are so many variables that no generalization can be assumed.

It may be one acre in some regions but 10 or more elsewhere. You can’t go to a store and buy a bag of “Purina Bee Chow” although beekeepers do occasionally feed supplements when their hives do not have sufficient natural forage. Sugar syrup is fed to bees to provide calories to barely keep the bees alive but for them to raise and feed the brood they need protein-rich pollen or a substitute.

This supplemental feeding is useful for short time only especially when they need lots of bees ready to pollinate crops before the crop blooms. How big is an acre? Visualize a football field (less the end zones) and you’ll see that a lot of blooming flowers are needed. Your bees will assure a good backyard crop yield for your local, melons, squash, and apples but your garden furnishes a tiny share of the nectar needed for feeding a colony.

Whether one acre or ten acres, this natural reservoir of nectar and pollen needs to be in full bloom from early spring to fall. Since there are no plants that are in continuous blossom all summer, the bees need to constantly seek out other fields that are in bloom. First spring pollen comes from willow, aspen, maple and alder but each of these are only good for two weeks. Next comes the fruit trees with lots of nectar and pollen but in a few weeks they are gone too. Black locust, basswood and other trees can furnish nectar from up to a million blossoms for a large tree but the blooming time is short. Dandelions bloom for about three weeks followed by clover but for the bees to find new resources they sometimes need to travel up to five miles to find the food that they need.

MICRO-ORGANISMS AND BEEKEEPING USA National Honey Board

What are micro What are micro hat are micro-organisms? organisms? organisms? Micro-organisms are a group of organisms that typically cannot be seen with the naked eye. Micro-organisms may be classed into four groups: fungi (yeasts and moulds), bacteria, viruses and parasites. All micro organisms exist in an active, growing phase (the vegetative phase) for all or part of their life cycle. Some micro-organisms remain in a dormant, hardy spore form, similar to a seed, until conditions are conducive to growth. Micro-organisms have an important role in determining the shelf-stability and safety of food.

Why micro- Why micro-organisms are important to beekeepers. organisms are important to beekeepers. organisms are important to beekeepers. Beekeepers have to be attentive to the micro-organisms that cause diseases in bees and the yeasts that can spoil honey. As consumers become more aware of food safety issues, food manufacturers have become more demanding. Honey is increasingly being used as an ingredient in different types of foods, pharmaceuticals and cosmetics.

Manufacturers of such products often set stringent microbiological standards. And since food processors frequently set purchasing specifications that include microbiological criteria, honey may be subject to tests by honey packers or end users. Honey suppliers will need to consider the microbiological purchasing specifications that they may face.

Since some micro-organisms cannot be removed from honey without destroying the honey, there is a great need for an effective partnership between producer and packer so that the honey meets a food processor’s needs and maintains honey’s image as a pure product. How micro-organisms get into honey. organisms get into honey. organisms get into honey.

Micro-organisms can enter honey either while the bees are making the honey (a primary source) or after the honey has been harvested (a secondary source).

The primary sources of micro-organisms are likely to include pollen, dust, air, dirt, flowers and the bees. Secondary sources of contamination in honey are humans, equipment, containers, insects, animals and water.

Possible routes of transmission into extracted honey would include air (in the honey house or while the honey is being packed), food handlers (from skin infections, sneezing or faecal contamination), cross-contamination (largely from animals or animal products) and equipment (including residues of food and water).

Floors, walls and ceilings can also be reservoirs of microorganisms that enter food.

Secondary sources of contamination are controlled by standard sanitation and good manufacturing practices.

What micro- What micro-organisms are found in honey? organisms are found in honey? organisms are found in honey? Bacteria from the genera Clostridium and Bacillus, yeasts and moulds are the most common micro-organisms in honey.

Microbiological counts are highly variable. Bacterial counts are often close to zero, but may occasionally reach 10,000 CFU (Colony Forming Units) per gram. An “average” count might be 400 CFU per gram.

Typically, yeast and mould counts in honey are less than several hundred CFU per gram if there are any at all. How to control micro-organisms in honey. organisms in honey. organisms in honey.

Practices that protect the health of the bees are likely to protect the quality of the honey produced by those bees. Since it is very difficult to remove micro-organisms from honey, it is more practical to learn how to block their entry.

This is done by following honey house sanitation guidelines and good manufacturing practices. More experimentation is needed to identify production techniques that influence microbiological quality.

What happens when honey is combined with other ingredients? edients? The anti-microbial properties of honey are reduced or removed when honey is combined with other ingredients.

Any micro-organisms that are present may then have the opportunity to multiply and spoil the food, cosmetic or pharmaceutical product.

OTHER TYPES OF BEEKEEPER

The Forceful Type

The Forceful Type A beekeeper who intends to move both heaven and earth in his attempt to do what he has set out to do, whether the bees like it or not. “Smoke the blighters and get on with it” comes to mind is his motto, making his bees bad tempered at the expense of neighbour’s goodwill. In most cases he is overdressed for example with heavy leather gloves that a hedge layer would feel comfortable with, thus making a mockery of handling bees.

The Fussy Type

This one looks at the sky to see if rain or thunder is about, looks at his watch to see if there is enough time to do what he wants to do, and then looks at the beehive. The job needn’t be done after all. Taking down a beehive, to him, is an event which must only be undertaken when conditions are just right and the stars are propitious.

The Careless Type .

“Never mind, everything will be all right” is his maxim. He never thinks forward of his needs and requirements for the job in hand, but starts cheerfully with the minimum of preparation.

If the smoker goes out at a critical moment, there’s plenty more fuel in the house. Queen excluder wanted? There’s one in the cellar. Smoker out again – now where are those matches? The opened colony can give rise to excessive amounts of chilled brood, in addition, bees are apt to smart under manipulation of this kind – and so might the chance visitor.

The Optimistic Type

His bees are expected to work miracles. If half dozen bees are on the wing, one must go a super, with foundation instead of drawn comb, as this will give them that extra bit of encouragement. When other beekeepers are uniting or contracting their brood boxes with division boards, the optimist is all for more room and more honey. Five combs are covered with bees, and the hive is composed of two brood-boxes and two supers, foundation and all.

The Inventor Type

Of all hobbies, beekeeping lends itself best to the inventor type. Ideas flow like water from a spring, from special floor-boards, patent feeders, contraptions that will make swarms, stop swarms, catch swarms, gadgets that will work marvels during a honey flow, central heating systems for use during winter, twenty first century beekeeping with a vengeance! Yet deniably he finds that his honey yields do not or ever match his beekeeping inventiveness.

The Learned, Theoretical Type

The one who has read everything ever published and knows all the answers. He searches the Internet daily to keep abreast of beekeeping, to the annoyance of all the beekeepers he meets. And, yet he manages somehow to get someone else to do all his bee manipulations for him, for speak it softly, he is scared to death of real live bees.

The Quiet Type

The one who attends summer and winter meetings fairly regularly, seldom has much to say and seems to timid or somewhat nervous to ask questions or advice. But when you see his bees, what a sight! Bees, bees and plenty of them. No shortage of stores, grand stocks that can “bring the nectar home in buckets” if the weather is good. He never has use of feeders, “I let them have a shallow super of stores to winter on,” he tells you. You realise he doesn’t need advice, that all he wants is good weather. His quiet manner hides a store of really sound knowledge of his bees, their ways as well as a whole lot of confidence in his own methods which he has tried and tested and that in his view have stood the test of time.

The Assured Type

This is the type who can handle bees with little or no difficulty at all. They are at home over a beehive whether using smoke, a hand water spray or a veil-with-a-slot-for-a-pipe smoking beekeeper. They come prepared, sometimes with a sweatband or neckerchief to keep perspiration out of their eyes, they discard gloves and they like to feel that their fingers are free to sense the gentleness of dealing with the bees. They wash their hands regularly whilst handling the combs as the bees sense this and behave themselves.

The odd sting is washed off before the pheromones permeate the air. He is deliberate in his actions, he seems calm and purposeful; he knows what he is looking for, he finds the queen with ease. Such beekeepers are not mowed up with ponderous bee suits that at the best of times look like an invader from a foreign planet. These operators are sent from heaven, they are a picture to watch, and those who chance to see them, know that they are indeed like angels visits, very rare.

The Bee- The Bee-Farmer

Then there is the type who is not the man whose principle income comes from beekeeping, as they are usually in class of their own as their livelihood is at stake. No, it is the man with lots of stocks.

Strange, but he is usually regarded as the one who never gets into difficulties and whose methods must be more than usually reliable. This of course may not be entirely true and, while the many-hive man with his large outfit has more scope than the small man, and his beekeeping methods can be more flexible, when he gets into trouble, it can be most often big trouble. Good beekeeping bears no relationship to the size of an apiary. Give me- Give me- any-sort-of-livestock

livestock Type

This is the type who has kept everything in his time, hens, rabbits, goats, geese, and pigs who adds bees to the list with a “they won’t get the better of me” attitude and approach. More often as not, he is the sort of person who comes by his bees easily; the gift of an unwanted swarm or a cheap buy from a beekeeper leaving the district. His knowledge of bees is at best nil, but his ever-cocksureness makes up for it. In essence he is a person with no real interest in bees. He needs watching, for until such time as the bees do really get the better of him and he reverts to his more larger and amenable forms of livestock, he is likely to encourage both annoyance and disease.

However, there are those amongst us who have or did have other livestock, and they are the exception; they are true stockmen with animal husbandry that is second nature to them, as most of them know the physiology of their bees to the same extent as their other farm stock.

SAFETY IN THE APAIRY

Beekeeping in generally is a very safe activity. Still, beekeeping presents a number of dangers of which the beekeeper should be aware. Prevention of harm is always to be valued above cure. What follows are typical hazards that every beekeeper should guard against.

Bee Stings.

For most beekeepers, bee stings are merely a nuisance. Nonetheless, beestings can be a real life-threatening hazard for beekeepers non-beekeepers alike who are allergic.

This subject has been covered in considerable detail elsewhere and will not be covered here, but non-allergic beekeepers should be certain to work and maintain bees in such as way that those who are allergic are less likely to be stung.

Burns.

Burns. Though admittedly rare, burns can pose a considerable problem for beekeepers.

Burns are most likely to occur when a beekeeper comes into close contact with the heat of the smoker. It is best to purchase a smoker that has a protective grate that surrounds the chamber that contains the burning embers.

Sunburn can also pose a threat to beekeepers. Skin overexposed to the sun during the course of a day may result in sunburn; skin overexposed to the sun during the course of many years may result in early aging of the skin and even a serious form of skin cancer known as melanoma. Chemical burns are also a possibility for those working with liquid acids.

Cuts and Contusions. .

Cuts from hive tools are a real possibility.

Well maintained hive tools are sharp, and should a hive tool slip and hit flesh when being pounded on, it can cut. Trapping a hive tool between a component of the beehive and oneself can also lead to cuts. Contusions are injuries that result without breaking through the skin. Such injuries can cause swelling and leave the skin bruised.

Contusions may result from pinching and crushing.

When moving portions of the hive, use caution. Do not drop or set down items too quickly. Beehives with a large number of supers can become unstable and fall, especially "sky scraper" hives.

When bumped or over filled with honey, these skyscrapers may come tumbling down much to the surprise of the beekeeper. If a beekeeper is beneath the falling hive, hundreds of pounds of honey-filled frames might fall on him causing crushing, broken bones, and worse. Before any hive becomes too high and potentially unstable, it is a wise idea to remove full supers for extraction.

Eye Damage.

It is commonly suggested that ultraviolet radiation may be responsible for eye damage related to cataracts and a rare form of cancer. To avoid problems in this area, wear sunglasses that reject nearly 99% of impinging UV radiation. Wear broad-brimmed helmets to help protect the eyes and face from UV radiation and the subsequent sunburns of head and neck. Eye damage also can result from flying projectiles. Power tools used for cutting grass spin quickly and can kick up projectiles. Should a stone or similar item be picked up and thrown by a power tool, they have the potential for causing eye damage. When working with power tools in the apiary to cut grass, weeds, or wood, using safety glasses, goggles, or a face shield is essential to protecting eyesight. Fire. Where there is smoke there is fire. When lighting a smoker, never light it inside a vehicle. Carefully extinguish the smoker's contents when finished. When emptying a smoker, make absolutely certain that the embers are out before leaving the apiary so that a fire is not started. Be careful if driving a vehicle with a catalytic converter through dry grass and brush. Such converters can easily set dry grass and brush afire.

Heat Related Illnesses.

Heat cramps, heat exhaustion, and heat stroke are of significant concerns for beekeepers, especially when there is a high temperature and humidity in combination. Heat-related illnesses can result mostly at these times when the heat index soars. Heavier full-body bee suits, while providing some degree of protection against bee stings, may increase the incidence of heat-related illnesses by restricting cooling air flow around the body. Protect yourself by working at a slower pace on hot, humid days, and periodically retire to a cool place. Eat less food and drink plenty of cool liquids.

Lyme Disease.

The deer tick is responsible for transmitting Lyme disease bacteria to humans. Deer ticks are very small, and most victims who come down with Lyme disease cannot recall ever having been bitten by a tick. Deer ticks are active throughout the year, but mostly in warmer climates. Because of the deer tick's propensity for "ambushing" warm-blooded victims, it would serve the beekeeper well to keep the grass in apiaries relatively short. Other preventive measures for unkempt areas include the wearing of long-sleeved shirts and pants, tucking pant legs into boots or socks or using leg straps, avoiding tall grass and underbrush, and checking oneself regularly for the presence of ticks. Applying an insect repellent containing DEET also may be effective against ticks. A Lyme disease vaccine is now available. A decision for its use should be made on the basis of individual risk, taking into account both geographic location and a person's activities and behaviour relating to tick exposure.

Muscle Strain.

Moving hives and hive components can be backbreaking work. Deep supers can weigh as much as 70 pounds or more when completely filled with honey. Unfortunately, the human body is not well designed to lift such weights. The arms, backbone, and legs essentially constitute a lever of small mechanical advantage that can subject the back muscles to a tremendous amount of stress. Muscle strain results from attempting to lift heavy items, lifting them improperly, or simply working too hard. In back strain the muscles are either stretched beyond their usual limits, or are torn as a result of too much stress. The pain results from damage to blood vessels, which causes bleeding in the affected area. The bleeding irritates nerve endings, causing pain. Such muscle strain can result in an inability to work normally, and the resulting pain can last days or weeks. When lifting heavy hive components, use the proper lifting technique. It generally consists of planting the feet squarely upon the ground and some distance apart. Squat -- do not lean forward -- keeping the back as straight as possible. Get a good grip on the object and lift slowly; do not jerk the object upward or twist the trunk of the body as the item is lifted. Set the object down in reverse order.

Pesticide Exposure.

Beekeepers use a variety of pesticides to manage mites and the small hive beetle. Inappropriate use of various chemicals can result in exposure by any of four different ways: absorption, inhalation, ingestion or injection from puncture wounds. When handling toxic compounds, wear latex gloves to prevent absorption of chemicals through the skin. Leather or cloth gloves may absorb these toxins and, if used over a long time, may result in a long-term exposure. Even if beekeepers use gloves, they should wash their hands after using these chemicals and before eating or smoking tobacco products. Touching food with contaminated hands transfers the poison to the food, which is then ingested. Keep food away from toxins. Label all pesticide containers properly, and do not use food-approved containers to store chemicals. Beekeepers should be absolutely certain to follow label directions when working with pesticides. Never contaminate honey intended for human consumption by unprincipled use of pesticides.

NEW LIGHT ON MIDDLE- NEW LIGHT ON MIDDLE-AGED 'UNDERTAKER' BEES

It's a dirty job and only about 1% do it at any one time. But middle-aged honeybees that serve as undertakers - removing dead bees from the hive - appear to be a distinct cadre of workers that are developmentally ahead of their peers. In this social world known for its division of labour, there also were unexpected discoveries by researchers. Undertakers don't get better with experience, and they don't do well working together. The findings are detailed in papers by Gene Robinson, University of Illinois entomologist, and Stephen Trumbo, a professor at the University of Connecticut.

The study on development, also written by entomologist Zhi-Yong Huang, appears in "Behavioural Ecology and Sociobiology". The work - which involved identifying the undertakers, marking them with tiny, coloured and numbered plastic tags, and following them closely through middle age - provides the first close look at undertakers.

Since bees' nests are built in cavities, such a specialty is important for keeping the nests clean. "Undertakers had very similar activity levels as other bees, they just do a little bit less of the other middle aged tasks, like building the comb and storing food brought in by older foragers. They also remove debris, which fits in nicely with undertaking. "Undertakers also develop slightly faster than other middle-aged bees, moving on to foraging before food storers and hive builders. Middle age lasts about 10 days. Undertakers usually removed dead bees for a day or two, but "one extraordinary bee remained at the task for 13 days," comments Trumbo. Undertakers respond to the odour of the dead, locating the bodies and carrying them out of the hive for 50- 100 metres before dropping them.

The researchers also monitored how swiftly undertakers worked. "We I 721 didn't find any evidence for learning for this particular task," Trumbo said. "This rules out one of the major hypotheses that has been put forward for middle-aged specialization: That social insects will get better and better at what they do." Previous research had shown that learning is important for the older foragers, who get more efficient as they learn what flowers are producing nectar at what time.

Not only did undertakers not improve in efficiency they also got in each other's way and slowed their efficiency. Robinson had shown previously that some bees are genetically inclined to be undertakers. He says "We're beginning to get a clearer picture of the behavioural profiles of interesting types of specialist bees, such as undertakers,

Understanding the career choices of bees is a useful model for understanding behaviour in general. This new information should enable us to develop new hypotheses about how neurons and genes in the brain function to produce the marvelously complex behaviour seen in honeybee society." Honeybees acquire different job descriptions as they age. Normally, it takes about three weeks for a baby bee to mature into a forager. Undertaker bees are usually around 14 days old, in the transition from nursing to foraging.

GLIMPSES FROM THE PAST

THE HONEY BIRD OF AFRICA Kaleidoscope February 1884

In the flower grown forests of Africa, there lives a curious little bird called by the natives, the honey bird not because it gathers honey, but because it is so fond of eating it. This bird is gifted with a peculiar instinct that enables it to find the nests of wild bees that are hidden in hollow trees and little caves in the rock, and many a battle it has with the enraged bees before it can enjoy the banquet of honey. When it scents a nest of honey it utters a peculiar cry, which the natives have learned to know; and the honey hunters (men who make a profession of hunting wild honey) find in the birds an invaluable guide to the wellhidden hives. All the man has to do is to follow the cry of the honey bird, and he is sure to find a nest of clear, sweet honey. A pretty little poem written about these honey birds contains this beautiful moral:

POOR HEATHER YIELDS

London Journal of Horticulture, October 1885

In Scotland it is the custom to move the hives of bees to the heather in summer. Owing to the continued low temperature, the honey harvest from the heather, this year, will not be great. Favoured localities may have yielded a fair quantity, but in many it is nil. In the south of Scotland we hear of 50 pounds being stored, but in the north it is a failure. From statistics the average honey gathering throughout Scotland will not exceed 15 pounds per colony.

The Times, November 1885

A small privateer, manned by fifty men, having on board some hives of bees, was pursued by a Turkish galley manned by 500 seamen and soldiers. When the latter came alongside, the crew of the privateer mounted the rigging with their hives and threw them upon their foes, who, astonished at this novel mode of warfare, hastened to escape from the fury of the enraged bees. Another instance occurred when a rabble at Hohnstein, in Thuringia, attempted to pillage the house of the parish minister; he caused some beehives to be thrown among the mob, which, in consequence, soon dispersed. Again, Vauban narrates how bees played an important part at the siege of Chatte, in Lorraine.

After a siege the town was being stormed, and during the assault the besieged threw a few hives of bees upon the heads of the storming party. The little creatures stung the besiegers so dreadfully that they had to retire; and the historian tells that " the bees were not the least cause of the siege being abandoned.

HONEYBEE COCKTAIL

- 1/2 tablespoon honey
- 1/2 tablespoon water
- 2 ounces white rum
- 1/2 ounce lemon juice

Instructions

Put the honey and warm water in a cocktail shaker and stir it until the honey is thoroughly dissolved. Add the white rum" and lemon juice, then shake viciously with cracked ice and strain into a chilled cocktail glass. If this is too dry, or if you're feeling charitable and generous of spirit, g'ahead and add a little more honey. Drink how ya like.

" According to Embury, this makes it a **Honeysuckle**: a Honeybee requires dark, Jamaican-style rum. Esquire's 1949 *Handbook for Hosts* disagrees. We'll go with Esquire.

Wales has become the first country in the world to DNA barcode all its flowering plants. This scientific breakthrough opens up huge potential for the future of plant conservation and human health. The work to make Wales No 1 in the world was carried out at the National Botanic Garden in collaboration with Amgueddfa Cymru-National Museum Wales and project partners from various universities. The Barcode 12 Wales project, led by the National Botanic Garden's Head of Conservation and Research Dr Natasha de Vere, has created a reference database of DNA barcodes based on the 1143 native flowering plants and conifers of Wales, assembling over 5700 DNA barcodes. Plants can now be identified from pollen grains, fragments of seed or roots, wood, dung, stomach contents or environmental samples collected from the air, soil or water. Dr de Vere explained the importance of the project: "Wales is now in the unique position of being able to identify plant species from materials which in the past would have been incredibly difficult or impossible. Barcodes and the battle against disease The National Botanic Garden of Wales is already collaborating with partners throughout the UK on DNA barcoding applications. PhD student Jenny Hawkins is working on a joint project between the Garden and the School of Pharmacy and Pharmaceutical Sciences at Cardiff University to DNA barcode honey for drug discovery. Jenny has collected honey from throughout the UK and is testing its ability to kill the hospital acquired infections, MRSA and Clostridium difficile, she will then DNA barcode the honey to find out what plants the bees visited to make it. Jenny said: "We know some of the medicinal properties of honey come from the plants the bees visit. By DNA barcoding the honey, we are looking for links between honey with good medicinal properties and particular plant species. If we find it, we might be able to make a super honey by allowing bees to forage on plants that provide high antibacterial properties." Barcodes and the fate of pollinators DNA barcoding may also be able to help in the crisis facing our pollinators. Dr de Vere is working with PhD student Andrew Lucas from the Swansea Ecology Research Team (SERT) at Swansea University to investigate the role that hoverflies play in pollination. Andrew says: "Hoverflies play a key role in pollination but we know very little about their behaviour. My research will collect hoverflies and find out where they go by DNA barcoding the pollen carried on their bodies. We are interested in how hoverflies move through the landscape and the importance of habitat quality." This work builds on a project with Aberystwyth University that examined bee pollination within species rich grasslands.

Not to be outdone by the Welsh, who have bar coded all their plants, I found this on the web site of Uprint labels - an American label manufacturer. Ever since the first cereal box barcode label was scanned at the supermarket, barcode labels have been embraced by business and commerce worldwide. We all know that shipping labels and other barcode labels are in wide use to track packages and scan products but what about the lesser known applications for this zebra striped innovation? Insect Research: Barcoding Bees In an effort to study the pollination habits of individual honeybees, the United States Department of Agriculture created the world's smallest bar code and attached it to the backs of worker bees.



Because of the unique features of the insects and the small size of the barcode label, the USDA was then faced with developing a more advanced barcode scanner. This led to the creation of the microdensitometer, the world's most sensitive barcode scanner. That's not a contrived photograph either. That really is a barcode on the bee's back. How it bends its abdomen to sting, I do not know.

Editor

Bionic Bees

Sometimes real science sounds more like science fiction. Just the phrase "bionic bees" sounds like something out of an old paperback. But that's the goal of a new project from the University of Sheffield and the University of Sussex. Engineers are planning on scanning the brains of bees and uploading them into flying robots, with the hope that the machines will fly and act like the real thing. The goal of the project is to create the first robots able to act on instinct. Researchers hope to implant a honey bee's sense of smell and sight into the flying machines, allowing the robot to act as autonomously as an insect rather than relying on pre-programmed instructions. Possible applications for the bionic bee include search and rescue missions such as a collapsed mine, detecting chemical or gas leaks and even pollinating plants just like a real bee. Dr. James Marshall, the head of the \$1.61 million study, wrote in a press release: "The development of an artificial brain is one of the greatest challenges in Artificial Intelligence. So far, researchers have typically studied brains such as those of rats, monkeys, and humans, but actually 'simpler' organism such as social insects have surprisingly advanced cognitive abilities." Researchers anticipate that developing a model for scanning and uploading an animal's brain will offer insight into how a brain's cognitive systems work, potentially offering advances in understanding animal and human cognition. "Not only will this pave the way for many future advances in autonomous flying robots," wrote Dr. Thomas Nowotny, the leader of the Sussex team, "but we also believe the computer modelling techniques we will be using will be widely useful to other brain modelling and computational neuroscience projects." The project, which researchers call "Green Brain" is funded by the UK's Engineering and Physical Sciences Research Council with technical help from IBM and hardware donated by NVIDIA Corporation. Scientists hope to have a bionic bee in the air by 2015.

Money going to Eastern European Beekeepers

After a disastrous year for honey, British beekeepers are questioning why more EU and government money is not reaching them when funds allocated to countries such as Hungary and Romania have contributed to a significant rise in production the past decade. The BBKA recently announced a 72% drop in honey production this year, due to bad weather. A recent survey, by the Bee Farmer's Association revealed production had halved in 2012, equating to a loss of £7m for the UK industry. Commercial beekeepers, like James Hamill of the Hive Honey Shop in South London, believe EU funding could improve productivity, as it has elsewhere in Europe. "We would like to see government funding paid directly to beekeepers, not research firms, charities or universities, but directly to anyone that takes and maintains a hive," Mr Hamill said. Beekeepers in Romania, who already receive direct funding from Europe, have doubled their bee colonies over the past decade. Between 2000 and 2010 the country produced 24,700 tons of honey. Romanian beekeepers have been promised further EU funding until the end of 2014.



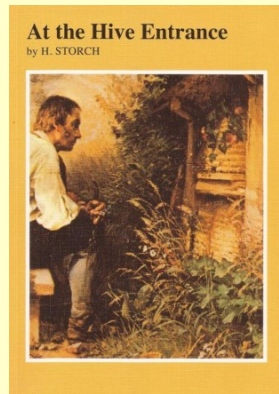
The country will receive €3.4 million by the end of 2012 with the same for 2013. This climb in production looks likely to advance further in coming years as the continuation of EU funding, combined with educational programs, organic farming measures, beekeeper registers, and geographical factors prove pivotal to the country's honey success. With over 80 percent of honey products on UK shelves imported from EU countries including Romania, Patrick Robinson, Operations Director of Rowse Honey, can see the advantages of beekeeping programs like those in Romania. "We use Romanian specialty honeys such as acacia and lime as well as polyflora. Through EU funding, Romania encourages beekeeping and the numbers of beekeepers is, we believe, on the rise." 18 Francisc Eget, 65, is from Maramures, northern Romania, and follows traditional beekeeping methods. Traveling south to follow the nectar from the Danube Delta to the rolling hills of Transylvania, he is quick to point out the benefits EU funding has on his livelihood. "Presently in Maramures, there are around 400 commercial beekeepers because the government intervened in helping stimulate the apiculture industry. Almost all are registered and we share all findings. We receive almost €4,500 every three years if all conditions are met." This distribution of funds across all registered beekeepers has had a positive impact on local and commercial beekeeping. In a country where the average monthly rental price of a three bedroom flat is only £240, these relatively modest funds have contributed towards distribution of parasite treatments and hive maintenance costs. They have also created accessible education programs. While benefits can be seen in Europe, British beekeepers are still unclear about where EU funds go in this country. Gill Maclean, of the BBKA, shares this concern. "EU money goes into the Treasury but there is no transparency in the way funds from Europe concerning honeybees are dispersed," Ms Maclean said. While honey production is dependent on warm weather conditions to produce nectar yielding flowers and suitable foraging weather for the bees, beekeepers and apiculture experts believe more can be done to encourage wild flowers across the UK. James Hamill is adamant that conditions could be improved if money was available. "We want to see more funds for planting open wildflower meadows and bee friendly flowers along railway lines, parks and highways. Councils and private companies making available open areas for the siting of beehives on rooftops, car parks, wastelands and water plants," Mr Hamill said. Francis Ratnieks, Professor of Apiculture at the University of Sussex, believes Britain could learn from Romania and introduce more wild flowers, in order to give our bees the best possible chance in the future. "One area that I think has great potential is in grazing land. Grass is the largest crop in the UK and uses the most land. It should be much easier to encourage flowers in grazing land than in arable land as animals can graze plants that produce flowers that bees visit, such as clover," he said. While British beekeepers are looking at European neighbours for ways to improve honey production, Professor Ratnieks believes this change in attitude towards our own wildlife would prove significant. Introducing more bees and having more beekeepers is worthless without the nectar producing flowers for them to forage. "Agricultural land is 75 percent of the UK, probably as high as 19 any country in the world. As well as a source of food, it has to be a home for wildlife as well. Doing both is going to be a challenge," Prof Ratnieks said.

Although St Ambrose is generally considered to be the patron saint of bees and beekeepers, there is another. Gobnait (Gobnet, Gobhnet, Gobnaid, Gobnata, or Gobnatae), was born in County Clare, Ireland, sometime in the 5th or 6th century. Gobnait is Irish for Abigail ("Brings Joy"). As the patron saint of beekeepers, her name also has been anglicized as Deborah, meaning "Honey Bee." She is generally thought to have used honey when healing the sick.

One of the miracles attributed to Saint Gobnait was that she protected a parish by unleashing a swarm of bees. Medieval beliefs about bees: "Bees are the smallest of birds. They are born from the bodies of oxen, or from the decaying flesh of slaughtered calves; worms form in the flesh and then turn into bees. Bees live in community, choose the most noble among them as king, have wars, and make honey. Their laws are based on custom, but the king does not enforce the law; rather the lawbreakers punish themselves by stinging themselves to death. Bees are afraid of smoke and are excited by noise.

Each has its own duty: guarding the food supply, watching for rain, collecting dew to make honey, and making wax from flowers." This is the basis of the Tate & Lyle Golden Syrup logo, with bees rising from the corpse of a lion (Who needs Ted Hooper?

Book review: At the Hive Entrance



A great little book. At first sight the cover makes you think it's going to be about some aspect of beekeeping from an historical viewpoint, whereas in fact it's about "how to know what happens inside the hive, by observation on the outside". This text was written by Professor Storch, a master beekeeper and teacher of apiculture, and first published in German under the title 'Am Flugloch'. The book follows through the seasons and presents an explanation against each observation made of activity at the hive entrance. Although the translation is a bit clunky at times the wealth of information and insight in the explanations make it worth putting up with this. The book takes us through an incredibly wide range of things you might observe when watching the beehive entrance and relates these observations of the bees' behaviours and activities to what is going on inside the hive, so providing really useful insights. The author's approach is that if we pay close enough attention to what such observations can tell us we'll know what is going on in the hive, and what to expect in advance should we then choose to open up the hive. Observations during the winter months are included which is particularly useful. It's an easy book to read straight through but also easy to use for reference as it's laid out by season so you can check what you are seeing at any particular time of the year. It costs about £15 a copy which may seem expensive for a relatively thin book but it really is packed with useful information.

BEGINNERS OBSERVING YOUR WORKERS

In general beekeepers don't go through their hives every other weekend. But, if this is your first hive, that is what is recommended. Each time you examine a hive, you cause disruption and it takes the ladies quite an effort to reorganize. The other side of the coin is that you need to learn much about your new hobby and there's no better way than by watching the bees every step from package to harvest. This bi-weekly inspection also gets you familiar with your bees, learning what is normal vs abnormal and it dissolves that secret fear you still harbour of "getting stung". Smoking bees is something you have to learn to do.

Too little smoke and they will release the alarm. Too much smoke drives them out of the hive and the air will be full of bees. Be calm, work very slowly; think about each step BEFORE you do it. Start with a couple puffs of smoke into the entrance. Wait a minute or two and remove the roof. Give them another puff into the inner cover hole. After you remove the inner cover, one or two more puffs is all you will need for the next 10 minutes. Listen; you can tell when another puff is needed; the hive's "base" tone changes! Always keep your hive tool in your right hand, don't set it down. Most of the bee stings I get each year are on my fingers and are my own fault. I have a habit of putting my fingers in places they don't belong and am often "chastised".

Use the hive tool to pry the frames up. You pry on the frame's top bar side, never on its ends. Prying the end will crack the rabbit on your brood boxes. I always remove the second frame first, examine it and then prop it up on the ground against the hive. This frame is usually just stored honey. Then frame by frame cut the propolis between the frame ears and remove each. If the bees are not working the outer frames, you can move them more toward the middle as long as you don't break up the broad nest.

Frames with brood need to be put back in the order you took them out. Notice I didn't say put back in exactly the same place; this allows you to move frames about, a bit. First get the big picture; notice the smell; listen to the soft hum. Start with an estimate how many frames of foundation were pulled out this week. Notice the cells how they are slightly slanted downward, perfect hexagons. Can you tell a few cells are larger than most? How much did the hive eat this week? How much brood is there this week compared to last? Is the brood uniform or does it have a "shotgun scatter" pattern? Find eggs and uncapped larvae.

Look at the eggs, are they each one per cell and anchored to the cell base? Look at the individual larvae what day does it start to curve, when does it begin to fill the cell. Each week read a little more about this miracle called metamorphosis and mentally map out the age of the larvae. Can you identify the drone brood's dome shaped capping vs. the worker brood's flat capping? Can you tell beebread from newly gathered pollen; fresh nectar from uncapped honey? If your first brood box is largely all pulled foundation, they are starting to use all the frames so its time to add the second brood chamber on top.

Looking at a frame of bees is a very calming experience to me. I get the same feeling as watching an aquarium of fish. I could sit and stare for hours. However, after about 10 minutes the noise level will rise. Although you could give them another puff and continue working, since you're just observing, its time to close it up for the week. If you haven't done so, start a logbook and write not only what you see but also what you expected and how you felt. Each day write a meaningful paragraph to yourself in the future.

You will do a better job of note taking if you image yourself reading this next year; five years from now; when you're retire and looking back on life. The extraordinary details you will give will stimulate your memory of the day and leave you with a logbook that has value to you as new beekeeper. My logbook is also my "to do" list which I check next Sunday for items I forgot today. Today's entry begins ... Saturday: a beautiful spring day with bees coming and going; a few bearing bright orange pollen pellets. I went walking and found my first dandelion flowers as well, all these locust trees are in full bud as well

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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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The last of Apis cerana?

The Asian hive bee is suffering a precipitous decline and is threatened with extinction in its entire native habitat.

This has already happened in Japan where this native bee species has been completely replaced by the European honeybee.

Today in Japan only a few beekeepers and research institutes maintain Apis cerana colonies. In China, out of more than 8.5 million colonies of bees kept in modern hives, 70% are exotic Apis mellifera.

Similarly, in South Korea, only 16% of beekeeping is with native Apis cerana. In the Hindu Kush, Himalayan range, beekeeping with Apis cerana is being replaced by Apis mellifera at such a rate that the population of the native Apis cerana is declining to a level that is no longer viable. From Bee World Dec 11.