Beetalk

Newsletter of The Blackburn and East Lancashire Branch of
The Lancashire & North West Beekeepers Association
August 2011 www.blackburnbeekeepers.com Registered Charity

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Vici Winstanley. Hon.Sec. 07827292844 email vicicoaffee@yahoo.co.uk

MEMBERS SERVICES

Bayvoral - Apiguard - Oxalic Acid -
Thymol - Fumidi'B'
These Chemicals for treating bees can be obtained from:
David Bush Phone 01200 - 428152
Dave will have them available at beekeeper's meetings.

LIBRARY

There is an extensive range of books on all aspects of beekeeping that can be borrowed from the Association library.
Please contact
David Rayner on 01200 426898

MEMBERSHIP

REGISTERED MEMBER. Subscription for the 2011 season will be £20.00
PARTNER MEMBER. This is for partners of registered members living in the same household wishing to keep bees and includes full insurance cover. However they will not receive their own copy of BBKA news. Subscription will be £13.00
COUNTRY MEMBER. This is for people who do not keep bees, but wish to receive BBKA news and attend branch meetings etc. This class of member does not include any insurance cover. Subscription will be £11.00

IMPORTANT INSURANCE NOTICE

Under the new constitution, prompt payment is essential. Basically, payment will be required by the 31st December each year as insurance is now based on the currant years membership. New and lapsed members insurance cover will not start until six weeks after paying their subscription.
For insurance purposes subs will need to be promptly, otherwise you will not have third party insurance
SUBS SHOULD BE PAID TO PHILIP AINSWORTH HON. TREASURER Phone 07713161480
Address :::::: Phil Ainsworth Riverside Cottage Potters :Lane Samlesbury Preston PR5 0UE

Association Swarm Catchers.

A small charge is made to collect swarms to cover expenses which is up to the discretion of the individual collector.

BLACKBURN, DARWEN, ACCRINGTON , MELLOR, PRESTON, ROSSENDALE AREAS

Bob Fulton

Telephone 01254-772780
E Mail:::: home.brew@talktalk.net

CLITHEROE AND SURROUNDING AREAS

John Zamorski

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David Bush,

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BURNLEY, NELSON AND SURROUNDING AREAS

Bill Ainsworth

Telephone 01282-614015
E Mail::::: billscotroad@o2.co.uk

Please feel free to ring any of the above in your area and they will do their best to sort out the problem.

FUTURE BRANCH MEETINGS

19th June 2011 @ 2pm Towneley Hall Honey Show Techniques

17th July 2011 @ 2pm Towneley Hall. Association Open Day

21st August 2011 @ 2pm Towneley Hall. Dr Julia Piggott
In Defence of the Realm. Bees and how they survive and defend themselves

Details of all the meetings can be found on the web site on the events page at www.blackburnbeekeepers.com

We will, where possible open hives so bring along your protective clothing just in case.

DISCLAIMER

The views expressed in any of the articles in 'Bee Talk' represent the personal opinions of the Contributors and in no way should they be regarded as the official opinions or views of the 'Lancashire & North West Beekeepers Association' nor of our local Branch of this association 'The Blackburn & East Lancashire Branch'

For Sale

Protective Clothing

1.Cotton Bee Protective Boiler Suits all sizes a bargain at £20 each

2.Net Veils that need to be fitted onto a hat at £3 each

3. Box of thin but very strong gloves at £3 for a box of 50 pairs

These are available by ringing Bob Fulton on 01254-772780

3. Available from Early March 2011 Fitted Veil at £15.

All in all if you buy the protective Suit, Veil and Gloves you will have yourself fully protected at a cost of £35 compared to something like £85 to £100 from other suppliers.

Sugar and Candy

20 kilo Buckets at £12

10 Kilo Buckets at £6

1 Kilo Bags at 60p

Candy Sticks at 30p per stick

These are available by ringing David Bush on

01200-428152

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.

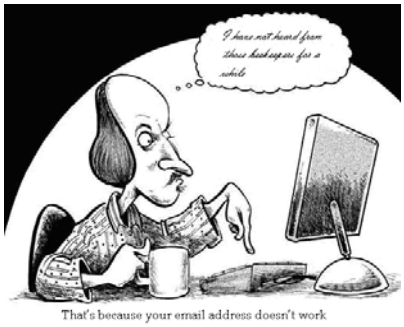
8. New for 2003 You must have a country of origin on the jar. For example - Produce of England, Product of Scotland, Harvested in Wales. Adding the country to the end of your address is not acceptable.

E H Thorne (Beehives) Ltd disclaims all responsibility for all consequences of any person acting on, or refraining from acting in reliance on, information contained above.

From EH Thorne's online catalogue 2010 - other sources are available

What's in the Honey Pot

A few snippets of news and information that may be of use to you



Editorial

Our membership secretary reports that several members' email addresses no longer work and emails are bounced straight back at him by the "mailer-daemon". If you've been feeling neglected by your Association lately, please check that we have your correct email address. You can rectify this problem, if it applies to you, by emailing
Michael Birt at webmaster@blackburnbeekeepers.com

Hi All,

Very Little in Beetalk this time. I have been up to my neck in doing some research on our native stingless bees over here in Thailand . This as meant me going into the rain forests

We could really do with some contributions from the membership. Anything will do, maybe a small article about what you are doing and how your bees are fairing.

From new and inexperienced Beekeepers, if you have any problems, questions, please feel free to send them in and I will try to answer them has will another other our experieced members. That is what we are all about.

Meetings have been going OK but a few members feel that it as become more of a lecture situation instead of the days when we had meetings at members homes and it was a more informal affair. It's a problem now as the membership as grown and it would be impossible to accommodate the large number of members in someone's home all at one time. Maybe an idea would be to split the meetings into smaller groups. This is of course something for the committee to discuss , and maybe you may have some alternative suggestions yourself for the committee to think about, or maybe most of the membership like things as they are.

By now most of you will have removed the supers and are in the process of extracting your honey. Hope things have been kind to you and your bees and that you have some rewards for your time and effort.

Don't forget the honey show. Have a go , its not about the winning, its about the spirit of the whole show. John Zamorski is not entering anything this year as he is training to become a judge so one of the main competitors is in football terms " on the bench". . By the way John keep up the training you will make an excellent judge.

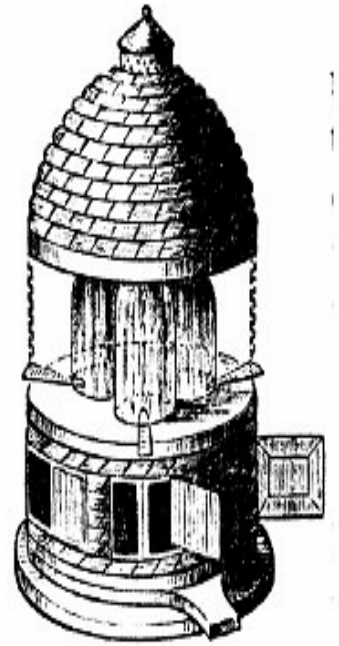
Begineers,don't forget that the Beekeeping year starts now, not in spring but now. Make sure your bees are in excellent condition to go through the winter. Make sure that the hives are secured and weather proofed. Make sure you have all your equipment cleaned, sterilised and made up for the coming season, it will be here sooner than you think.

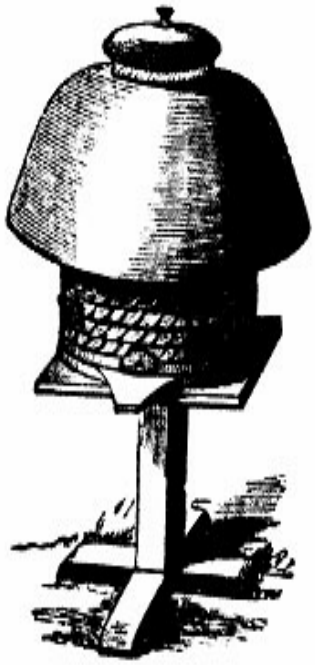
And please send me something in for YOUR Beetalk.

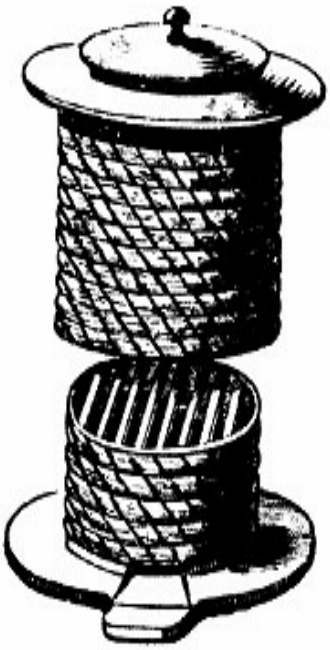
Best wishes

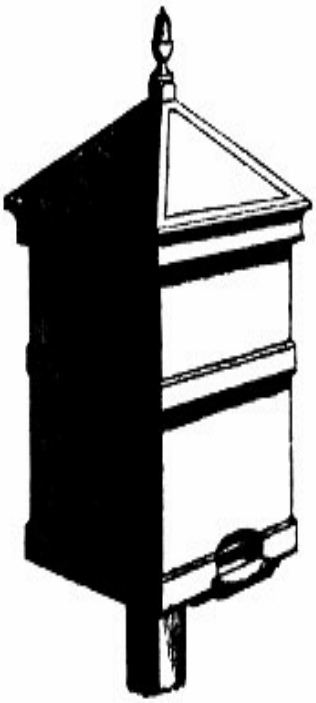
Michael

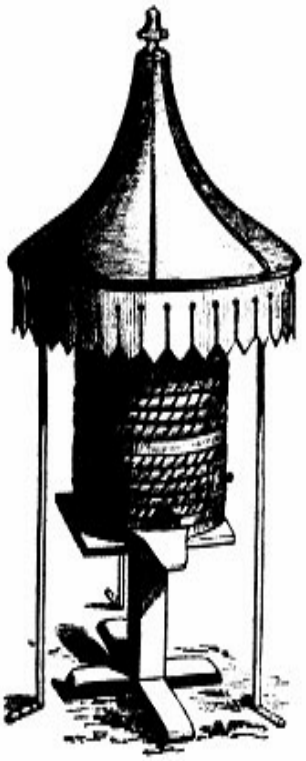
Some old style Beehives











Some pictures of some old style beehives that were used before the days of Langstroth. Relly lovely works of art

How Do You Keep Your Bees? - Part II

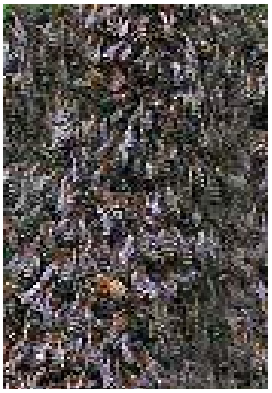
– and the ongoing argument for and against brood-and-a-half!

Over-Wintering

The winter of 1985-86 was long and severe and many beekeepers in England and Wales experienced high losses. A survey carried out in Shropshire (Beekeepers' Quarterly, Summer 1986, No. 6, Selby Martin) showed (amongst other things) that colonies over wintered in single deep National boxes suffered twice the mortality of those in brood and a half; 49% (n=198) and 26% (n=51) respectively. (So the majority of beekeepers in that part of the country at that time (75%) over wintered their colonies on a single brood! According to the same survey, Smith hives on a single box suffered even worse with 64% mortality (n=64). Interestingly, there do not seem to have been any Smith hives on brood and a half. This suggests that in a difficult winter a single box has some quite serious disadvantages. So what's this all about? Natural bee nesting cavities in trees are often (but not always) quite tall and narrow. One I recently examined was about 5 feet (1.8m) tall and no more than 9-12inches (22 30cm) wide at any point. Bees naturally arrange their stores around the brood-nest so that they start at the bottom in autumn
and work up through them during the winter. Using a single standard deep box, height is limited and, once the cluster has eaten its way up to the cover-board, the only remaining stores are at the sides of the box. If the colony is small and the weather is cold, isolation starvation can occur – the stores are there but the bees can not access them. This situation can be exacerbated if the old practice of removing the cover-board and replacing it with a square of carpet has been used. Giving them a nice bit of carpet may sound like a kindness but, with no bee-space at the top of the frames, access to lateral stores is
limited to the much colder bottom route.

Cluster Shapes in relation to height of hive

In Single Deep



In Single Extra Deep

Carpet also impairs ventilation and tends to get soggy with condensation – you must assume that I am not much in favour of carpet! Successful over-wintering is not only about the ready access of stores, it is also about heat conservation. In a tall hive, the winter cluster of bees will arrange itself in the shape of a rugby ball standing on end (ready for a penalty or a conversion). If the hive is shallow (as with a single standard deep box) the same number of bees will be forced to adopt the shape of a rugby ball on its side (see above). This has important implications for heat conservation and the tall, narrow cluster will retain heat much better than a broader, shallow cluster. It's all to do with convection; cold air enters the cluster at the bottom and rises up by convection to exit at the top. The bees naturally pack more closely when it is cold and this serves to reduce the flow of air through the cluster. The smaller the cross-sectional area of the cluster in relation to the rising current of air the more heat efficient it will be. The bees in a broad shallow cluster will be able to compensate for the increased heat loss but only at the expense of using more stores. The well-known beekeeper from Northern England, Peter Hewitt, who does his beekeeping at altitude in the Pennines, over winters his bees in a double deep brood
configuration. Inside the boxes the number of frames is reduced to about 8 frames per box and flanked by dummy boards. This creates a tall relatively narrow space in which the bees could store their winter food and form a heat-efficient cluster. As the colony starts to re-build in spring dummy boards would be progressively removed and replaced with drawn frames. It is possible that some beekeepers in the mountains of Wales
might find this idea useful? I expect you have guessed by now that we favour the brood and a half configuration for most of our colonies. In a later article I will describe how we manage our colonies using this configuration.

By Wally Shaw, The Welsh Beekeeper,
thanks to eBEES.

BEGINNERS PAGES

Spring Work

At this time of year you will either be eagerly looking forward to greeting the 'girls' again, or rather despondently wondering where you are going to get some more bees from. If your bees went into the winter as a strong, queen-right colony, well fed, treated for Varroa, and in a snug, water tight hive, then you will have done all you could for them. If they succumbed during the cold weather, don't blame yourself. There are virus diseases out there that will finish off a colony, no matter how well prepared it was. Some of these simply shorten the bees' life-span, and during the non-breeding phase of the winter, the cluster dwindles until it is not of a viable size to generate enough heat to survive. The same thing happens with a drone laying queen or laying workers. The latter should have been spotted in the autumn, but a late, failed supercedure queen can escape detection at the last autumn inspection. These days, 'dead-outs' can affect a beekeeper of any level of experience. If, however, you neglected any of the winter precautions, then learn a lesson from it, get some more bees as soon as you can, and try again.

February Not much actual work can be done until the weather warms up, but there are interesting observations to make at the hive entrance. On a milder day of about 10°C, the bees will emerge for a cleansing flight, clear out any dead bees on the floor and then rearrange themselves on the stores frames. Any hive that shows no action at all on a mild day, should have its crown board lifted up gently, to see if there is a cluster of bees visible. If the colony has unfortunately died, deal with it immediately, or block the entrance until you can- you don't want any robbing happening if you don't know the cause of death. If there is a cluster, disturb it as little as possible. Check the stores, and make sure there is a frame of stores right next to the bees. Some insulation over the crown-board might help a small cluster maintain its core temperature. If you use an open mesh floor, put the Varroa tray in, to retain heat, but clean it regularly. Stores in any hive should still be adequate, but the queen will have already started laying, and from now on stores will be used up at an ever increasing rate to feed all the hungry new mouths. Spring is when most colonies starve, not the winter. Heft the hive to gauge its weight, if you think you can, otherwise be more accurate and weigh it, using the widely available digital, spring luggage scales. A single brood box hive, including frames, bees and roof - but not the stones on the roof! - weighs about 30 lbs. Subtract this from the total weight and you have the weight of the stores. A double brood hive weighs around 42 lbs, brood & a half is 40 lbs. Simple! Do this fortnightly and be prepared to make up any shortfall in stores with fondant or sugar syrup, if it is warm enough. On mild, flying days, you may see pollen being taken into the hive. This is always a heartening sight, as it means there is new brood being fed in the hive. Try and work out what pollen it is—wild cherry, willow or crocus? Maybe snowdrop or aconite? Bees gathering around a water source is also a good sign. The water is needed to dilute honey to feed to the brood. You could give the bees a drinker, to save them having to fly too far- they easily get chilled, carrying a load of cold water. A shallow bowl, filled with gravel to avoid bee drowning, is as good as anything. Put it a little way from the hives, not right next to them - bees seem to prefer having to fly a bit to water. If you do this early in spring, you may deter the bees from using your neighbours pond or fountain instead. This can cause as much trouble with neighbours as swarms and yellow spots on the washing!

March

Brood rearing will be well underway by now, so keep checking the stores. It is too early to do an inspection, but you can change the floor board on a nice, mild day. Gently lift the hive to one side, change or clean the floorboard, and replace the hive. You can do the same with the crown board if it is damp or dirty, Look at the cluster and count the seams of bees, but do not move the frames at all. Now that the bees are more active, the mouse-guard can be taken off. Make up any spare equipment you might need, for swarm control or increase. Swarming comes early in good weather, and you don't want to be caught with everything still flat packed when you need to use it!

April – First inspection

This month, weather permitting, the colony will really get going. Hopefully there will be some spring flowers to provide food, but give thin syrup if you are at all worried. Do not give too much at a time, or the brood nest will become clogged up with it-the last thing you want. One of the causes of swarming is lack of room for the queen to lay. Some time in April, there should be a day warm enough to do a first inspection. It needs to be above 15°C, with little wind - shirt sleeve weather. Mid-day is the best time. Collect all you need before you start, including new frames of drawn comb or foundation, and get the smoker lit. Give a puff of smoke at the entrance, wait, then gently remove the roof and crown board. What can you see? A 'normal' colony in April will have about six frames of bees visible. Much less, and the colony is a bit weak, more than that is strong. Is the cluster central or one sided? Expansion of the brood nest is easier if it is central and you can take the opportunity to relocate it into the middle of the brood box. Remove the outside frames from one side. If you are going to move the cluster, work from the side with most empty frames. Are there any stores on them? Are they clean or a bit mouldy? Are they full of pop-holes or drone cells? Is there any wax moth? What colour are they? Do you want to replace any with, new comb or foundation? Examine each frame. How many bees are there on them? Watch out for the queen she can be anywhere! When you come to a frame with a lot of pollen on it, the brood nest probably starts on the next frame, and that area is the most likely place to find the queen. If you do find the queen on an earlier frame, it is a good idea to put her safely in your frame holding box, where she can come to no harm. Put the box somewhere where you won't kick it over! Continue to examine each frame. At this first and every subsequent inspection, ask yourself the same questions: (1) Is the colony queen right?
In spring, ask, are there any queen cells, indicating incipient swarming? (2) Is the brood nest the right size for the time of year? (3) Is there room to expand it? (4) Are the bees and brood healthy? (5) Are there enough stores to last until the next inspection? 1. You may not see the queen, so ensure that you see plenty of eggs. The presence of eggs means that she was there three days ago, and she is unlikely to have gone anywhere. If there are queen cells, take the appropriate action for the time of year. 2. A brood nest of five to seven frames is about right for April. 3. A queen can lay 1500 eggs or more per day at the height of the season- that will fill a well drawn frame of new comb in three or four days. As comb is rarely completely filled with brood, it will in fact, last less time. Ensure there is enough empty comb for the queen. 4. Are the unsealed larvae pearly white and curled up comfortably at the bottom of the cell? That is the ideal. Discoloured, smelly or distorted larvae are a danger sign of possible foul brood. Are the cappings dry, slightly domed and biscuit coloured? Good. Sunken, perforated or 'greasy' looking cappings are another danger signal. Another brood problem you might notice is chalk brood, with white mummified larvae in some of the cells and also on the floor. A few of these are unimportant, and the trouble may clear up as the season advances. A very bad case retards colony expansion, and requeening may be the only answer. Are there signs of pests or disease on the adult bees? Deformed wings or phoretic Varroa may be seen. Any brown or yellow staining on the combs is dysentery, caused by the bees defecating in the hive. This may simply be the effects of honey with too high a water content, perhaps heather, combined with prolonged cold weather, but it could also be a symptom of Nosema. A sample of recently dead bees sent to the microscopist will determine this. 5. A colony should have at least ten pounds of stores at any time. This is about the equivalent of two full deep frames of honey. if it is cold, wet or there is no nectar flow, it is particularly important to make sure the colony does not go short of food. When you have assessed the colony, close the hive up. Don't forget to put the queen back if she is in your frame holding box! Write your notes at once, especially if you have more than one hive. It is all too easy to get confused, if you try to remember later on what you found! Hopefully all was fine, but if not, decide if the problem can wait until the next inspection, or if it needs immediate attention. Your next inspection date depends on what you found and the weather. Five frames of brood with plenty of stores and space can wait a fortnight; eight frames of brood, in a warm spell will need extra room very, very shortly, either an extension to the brood nest, or a honey super if there is a nectar flow on. If you are feeding, do not put a super on over a queen excluder- you will just get Tate and Lyle honey. Sugar syrup should go in the brood chamber, not the honey super! Don't forget that the swarming season is only a week or two away - from May onwards, weekly inspections are advisable, to try to prevent or to control swarming. There will be more about swarming in the next edition.

Written by Judith Rowbottom, Harrogate & Ripon BKA, thanks to eBEES

Iphone app for beekeeping records

Beekeeping records are of paramount importance to keep tabs on exactly what is going on in the apiary. Now you can download an 'app' for your iphone that will do it all for you – allegedly! It can be found at www.beetight.com and has been featured in Beecraft recently. Quickly identify your hives with printable labels Most smart phones can read the special barcodes using their built-in camera Pull up hive records instantly Unique short "hive.es" link for every hive See all apiaries and hives sites at a glance. Show locations on a map, and view current weather at each site Record primary forage at each site View all details of a hive at a glance. Track colony sources and queen parentage

With a free account you can add up to six hives. For $15/year (£9.00) you can upgrade to a Pro account which allows up to 1000 hives and includes Bee tight for Android, and the Pro web app. According to Chris Strong, who has been using it, there is only one application

I DON'T NEED ONE OF THOSE!!! Peter Edwards, Stratford-upon-Avon BKA

At £16.85 each (remember I am using Thorne's prices) Wood and Wire Queen Excluders are expensive!

To a prudent beekeeper that might be reason enough to consider the alternatives, but my main dislike of them is their durability. The wire breaks away from the wood very easily and the wooden frame is easily broken if the excluder is well propolised down. If the wire warps away from the wood then it will create a gap that will allow the queen into the supers.

So what are the alternatives? Plastic is not an option in my view as I cannot clean it with a blowtorch. The zinc short-slot excluder has served me well for many years and some that I framed myself in the 1980s are still going strong but I eventually gave up framing them through lack of time; it seemed to make no difference to the crop. The excluder must be removed fairly carefully if propolised down or it can easily be distorted; the secret is to peel it off from just one corner. The zinc excluder can be cleaned with a blowtorch, but this does require great care.

Recently, Thorne's have introduced a steel version of the short-slot excluder and this is, in my view, a real winner - very strong, easily cleaned and at £6.07 a saving of £10.78 over the wood and wire version.
Now I can hear some of you saying that the round wires are smoother and do not injure the bees as they pass through them. Personally, I have never seen any damage resulting from a bee going through a slotted excluder and recently read that, in general, bees do not move up and down through the excluder very much—bees below pass honey through it to waiting bees above. If you must have wire then Thorne's have an 18" square version without the wooden frame at £9.84.

Excluders are also sometimes described as honey excluders but that cannot be true either when we see colonies with upwards of six and sometimes as many as twelve supers of honey on them above a standard unframed slotted excluder.

MAGNETIC BEES

Each honeybee hive produces about 29 kg of honey per year. To help them make this honey, the bees talk to each other - and just recently, some scientists have learnt to speak this language! The story begins back in 1923, when Karl von Frisch from the University of Munich in Germany, published his first paper on the language of the honeybees. He reckoned that they "spoke" with each other by dancing the dance!

Suppose a honeybee has found a flowerbed rich in nectar and pollen. She flies back, into the hive, and tells her fellow workers about the flowers - by dancing. If the flowers are within 100 metres of the hive, she flies in circles. Soon, her fellow workers leave the hive, and fly in ever-enlarging circles until they find the flowers. But if the flowers are further away (up to three kilometres away), she dances a different dance inside the nest. She flies in a straight line, while waggling her rear end, and then flies a curved line to the beginning of the straight line, and does it all again. If her straight line points vertically up, then the other bees leave the nest, and fly in the direction of the Sun. And if the straight line points 60o to the right of vertical, the other bees fly in a direction 600 to the right of the Sun. And the speed of her waggling bottom tells the other bees the distance to the flowers - the faster the waggle, the closer the food!

Karl von Frisch received a Nobel Prize for this theory in 1973. But his theory didn't go far enough. Most beehives are pretty dark inside, and like us, honeybees can't see very well in the dark. So how can they see each other do the dance? In the 60s, other scientists discovered that dancing honeybees emitted a sound from their wings, vibrating at 220 beats per second. They were singing a song with their wings. And honeybees do have a sort-of-ear on the second joint of their antennae. It seemed reasonable that bees could hear this song, but how do you prove it?

In the late 80s, Wolfgang Kirchner and William Towne proved it with a robot honeybee. It had razor blades for wings, and tiny computer-controlled motors to make it dance. It could sing the song with its razor blade wings, and dance the dance via its electric motors. Real honeybees would ignore their robot razor blade honeybee if it just danced the dance, or just sang the song. But when it did both the song and the dance, the real honeybee would obey it. The scientists could actually talk to the animals! They could get their robot honeybee to send the real honeybees out of the nest in any direction they wanted! So by using a song-and dance routine, the bees can tell each other the best place to eat out. But once they've picked up their nectar and pollen, how do they find their way back to the hive? Honeybees have another trick - tiny compasses, in their tummies, that sense the Earth's magnetic field.

Now under the right conditions, magnetic fields can effect humans. Susan Blackmore wrote about her experiences in the New Scientist, after a neuroscientist had blasted her brain with intense magnetic fields in his laboratory. She felt nothing for the first ten minutes. Then, even though she knew that she was reclining perfectly still in a chair, she felt as though she was swaying on a hammock. Almost immediately afterwards, even though she knew that there was nobody near her, she could feel "two hands grabbing her shoulders and pulling her upwards." As the magnetic fields continued to act on her brain, she could "feel" something grab one of her legs and try to pull it up the wall - although her eyes told her nothing was happening! And then the magnetic fields began to act on her emotions. She suddenly felt very angry - but she didn't know what she was angry about, nor at whom she was angry. This anger lasted only ten seconds, but as it faded, she was suddenly beset with a very intense attack of fear. Again, she was not scared of anyone or anything, but she was very afraid.

Now the human brain is very complicated, and we don't know why intense magnetic fields can cause such dramatic changes. But we do have a better idea of what's going on in honeybees. There are a few different types of magnetic materials. One is a type of iron oxide called magnetite, which is naturally magnetic, and we know that lots of creatures have tiny magnets of magnetite in their bodies. But there's another type of iron oxide which is paramagnetic. Paramagnetic materials are themselves not magnetic, but, they are pulled by magnetic fields. So a non-magnetic paper clip made of soft iron is actually paramagnetic, because it can be pulled by a magnet.

According to researchers Hsu and Li of the National Tsing Hua University in Taiwan, honeybees have tiny paramagnetic particles in their bodies. These particles are inside cells inside the bees' tummy. Depending on whether they are lined up side-by-side, or end-to-end, the paramagnetic particles can, as the external magnetic field changes, swell or shrink. But the particles are attached to the "walls" of the cells that they are in, so as they change shape, so do the cell walls. And nerves, attached to the outside of these cells, carry signals up to the honeybee's brain. So the magnetic cells in the bees tummy are like tiny onboard compasses. This is the first time scientists have actually followed the "line of information" in a living animal, from the magnets to its brain. Now honeybees are told how to leave the nest and where to go by the buzzing wings and waggling dance of another honeybee. And, by using the paramagnetic particles of iron oxide, these honey bees can avoid getting lost on the way home, and iron out their problems with a little magnetic navigation.

(During a recent episode of the TV programme “QI” it was stated that, if you put a powerful magnet inside a bee hive, it would affect the construction of the honeycomb. Anyone willing to try this? Ed.)

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