Montgomeryshire Beekeepers Association

The BeeHolder

Winter 2012

Remember the Summer?

or

Hide and seek among the crocuses

Contents

Editorial

There are two themes running through the articles this time around. Breeding the right bee for the region and “keepability”, and the health benefits of honey. This is complemented by a variety of seasonal fillings – meeting reports and information on our nascent program of events for next year. Some of the reports are a bit technical (what can you expect from publications like Microbiology Today?). I hope I have got the balance between education and entertainment about right. Let me know what you think.

Thanks must go to those who contributed articles, which unfortunately had to be trimmed of some of their original goodness in order to squeeze them into this small format publication.

If you want a surprise and to learn something groundbreaking, read the article “The Honey Crop” on page 13. It isn't about what you think it is.

Chris Leech

Forthcoming Events

January 25th — **MBKA Annual Dinner**
Friday 7pm — will be held at Maesmawr Hall, Caersws
See page 17 for the menu and sign up details.

February 16th — **Beekeeping for beginners**
Sat 9:30 – 4:30 — at Gregynog Hall, Tregynon
A one day course by Brian Goodwin which will set you up for your first foray into the craft of bee keeping (see also P12).

February 19th — **MBKA Annual General Meeting**
Tue 7pm — at Plas Dolerw, Newtown
The AGM has three really good things going for it. The business part of the meeting is kept to a minimum, there is a free raffle for a beehive and we have a great guest speaker (Jenny Hawkins) lined up.

February 23rd and March 2nd — **Intermediate Beekeeping**
Sats 9:30 – 4:30 — at Gregynog Hall, Tregynon
A two day (consecutive Saturdays) course by Brian Goodwin for bee keepers with at least 12 months experience (see also P12).

March 13th — **MBKA Talk : Bee Improvement, a Regional approach**
Weds 7pm — at Plas Dolerw, Newtown
A talk by Steve Rose covering strategies for cooperation between beekeepers to promote a healthier strain of bees in their apiaries.

For the latest information, check the website **www.montybees.org.uk**

Chairman's Chat

At this year's (2012) National Honey Show two American Professors of entomology were arguing, in a polite stylised way, about bee genetics and the possibility of inheriting hygienic behaviour. Their lectures alternated over three days and produced some heated discussions at coffee between lectures. Most go to the NHS for the lectures and coffee discussions. If you care about bees it is good to learn more and if you've ever been to university it is good to get involved again in an academic hot house.

One of the great innovations at this year's National Honey Show was a day of research lectures where there was an opportunity to listen to reports of research in progress and perhaps to spot the academic stars of the future. I particularly enjoyed Jenny Hawkins' "Apothecary Bees, using the honey bee as a tool for drug discovery". BBC Wales News has already featured the research and is going to film regular 6 monthly follow-ups. Jenny Hawkins will be the main speaker at our AGM on 19th February .

All very exciting stuff in sharp contrast to reports of what is happening to British bees and beekeeping this year. Everywhere was doom and gloom. The worst year in living memory seemed the general consensus and the only comfort I found was that our own problems in Mid-Wales are not unique. Bees not taking down the feed, and if they do the stores remaining uncapped, bad mating and unpredictable swarming ...all the signs of trouble! The boss-man of Thornes remarked that sales were very slow with people holding back because they did not know whether they would have any colonies next year. "What other branch of agriculture goes into winter not knowing if they will have any stock in spring?" I must have quoted his remark a hundred times since October. OK we should expect big loses over this winter but we must not give up being beekeepers. We must restock and the MBKA has decided to offer subsidised Nucs again to members. We will cut the price further if we can because we want to discourage importing queens and nucs from outside our area. I have been phoning round to check on the nucs that we sold this year and one thing stood out: Those who had been to either of Brian Goodwin's training courses were coping much better than those who had not. Many had already put on fondant rather than wait till January and many, on Brian's advice, had bought the fondant well ahead of the winter. We are repeating Brian's Courses during February and March 2012. Book soon to avoid disappointment (see page 12)

And finally a very happy Festive Season to you all and I hope that I'll see you at the annual dinner on Friday 25th January (see page 17 for details)

Tony Shaw, Chairman MBKA, December 2012

Reports on meetings

October 17th - God Might Save Our Queen

(But we would probably be better following Dinah Sweet's advice)

The meeting room was packed. Dinah is a well-respected and eminent member of the beekeeping fraternity, and we were treated to a very professional presentation on a fascinating subject.

Dinah suggested the following reasons for failure in the queen population, and went on to discuss each aspect in further detail:

Increasing numbers of new beekeepers
New hive types and "natural" beekeeping
Climate change
Different strains of bee
Disease
Chemical treatments
Pesticides and herbicides
Drone behaviour and queens not being mated properly.

One sign that may suggest that the queen is failing is evidence of eggs turning to drones; this may suggest that the queen has not been fertilized properly. Poor weather patterns have affected mating flights of virgin queens and have also affected their ability to find drone congregation areas. Sometimes she has to fly several times to fill her spermatheca and the more times she has to leave the hive will increase the risk to her survival. Also if the flights take place early in March or April the drones may not yet be sufficiently mature.

The age of the queen needs to be considered as increasing age reduces her reproductive capacity. Old age may reduce the amount of queen substance she produces which may stimulate the formation of new queen cells. Injury is another factor. Queens can be damaged when they are marked or clipped.

Dinah suggested that new beekeepers benefit from mentorship by the experienced and she stressed the importance of taking a beginner's course. Novices need to develop a working knowledge of the behaviour of bees and their mating habits in order to improve both hive and queen survival. She advocates that newcomers understand the need for apiary hygiene in the advent of modern disease trends. Access to ongoing formal education for all keepers new and

old, is key to improving hive success. See pages 12 and 16 for info about MBKA courses.

Hive types were discussed and whether our choice reflects in colony survival. Warre hives make it difficult to see what is going on within the hive, and the top bar style, although fine in warmer climates, makes for little honey in Wales. The newer plastic hives can be deficient in ventilation and could therefore potentially lead to an internal climate that might predispose to development of chalk brood and difficulty in evaporating moisture levels to make honey. On reflection, I think the more traditional type, such as the Smith hives that Dave Bennett has on offer at the moment, might be better for a beginner like myself to start off with.

Then the unpredictability of the climate can affect foraging bees. Brood starvation due to a sudden dearth of pollen and nectar will result in little or no brood leading to a reduction in the adult bee population and hence putting the queen at risk. Most members of the group agreed that they had had to feed their hives regularly, even through the summer. Dinah indicated that the poor weather patterns have led to a lack of availability and variety of good quality pollen. This is particularly important early in the season when their early flights often using more energy than they yield by feeding. Despite the general air of gloom that seems to prevail regarding the future for our bee population, it was heartening to hear that she considers that bees will adapt to our changing climate and new robust strains will develop. Dinah did however caution the group regarding the dangers of importing queens.

Dinah discussed a number of diseases affecting queens including the black queen cell virus. Inevitably the familiar blood sucking varroa mite was mentioned. The mite prefers to colonise drone cells and destroying drone comb to reduce varroa levels might cause such a reduction in drone population that it affects the mating of queens. We were told that some strains of bee have an greater susceptibility to diseases such as Acarine and chalk brood, and the importance of regularly changing the comb was highlighted (a three year cycle).

Chemicals that are now habitually used to manage disease may be affecting queen survival. This poses the question; does the wax absorb these chemicals? As the queen doesn't leave the hive after mating she is in longer contact with the wax; and over her much longer life expectancy would be more exposed to these chemicals than other bees. The instructions for use should be followed to ensure the correct dosage. Further research to determine the negative effects of pesticides and herbicides on the bee population is also needed.

Despite Himalayan Balsam being on the noxious plant hit list, it has its virtues. As well as being a great nectar source late in the season, the coating it gives the bees results in increased grooming in the hive, much the same effect as dousing bees with icing sugar as a

method of varroa control. Win, win I would say!

Did I really say that I wanted to take up beekeeping? I must be mad. Maybe in a year or two I will be conversant with all the terminology, hazards and general wizardry of the craft and take it all in my stride, but it seems like a mighty hill to climb at the moment. I think I need to see if I can't spot an unsuspecting mentor for myself next time around. Am I mistaken or is that the sound of footsteps running away in the distance?

Annette Batty

I edited quite a lot of Annette's article away, but I will put the full text on the web site. Ed

November 14 - What being a blind beekeeper teaches us.

Wales only blind beekeeper, Rebecca Blaevoet, gave us an interesting talk on her experiences so far as a blind person keeping bees.

We shouldn't have been surprised to hear that the reasons why Rebecca became interested first in bees and then in taking up beekeeping were the same reasons as for many of us. The well publicised plight of the honeybee, followed by the keen interest which only grows as we find out more about these fascinating insects. It was clear that Rebecca is quite a strong willed person, and was not put off when there was resistance to her taking a beginners' class. Her husband, Emmanuel, was roped in as a sighted assistant to help during the course as a condition of her being allowed to do it. This is not the first time, it seems, that Emmanuel has been roped in to one of Rebecca's projects!

They now both keep bees : Rebecca looks after her hives and Emmanuel his. Rebecca is the tortoise – slow and methodical – compared to Emmanuel as the hare – faster, being sighted, but is he missing something in the haste? There is little overlap except when problems arise, such as when their bees raided a neighbours barbecue. They are also the editors of the Welsh Beekeeper magazine which you all get quarterly.

Rebecca related some amusing anecdotes in the process of explaining how her gloveless approach is necessary to feel her way around the hive (very gently), and how she can glean much of what is going on in there simply by listening to the buzz. It was an amusing and interesting talk and shows that bee keeping can, and should be, an inclusive hobby.

Chris Leech

Festering Wounds

Last year, scientists confirmed that New Zealand Manuka honey could be used to combat some of the most hard-to-treat infections that are resistant to powerful antibiotics. Hospital acquired infections of MRSA and Clostridium Difficile (C Diff) are costing the NHS millions of pounds each year. There are just too few antibiotics that are effective against these bacteria. These antibiotics are used as a very last resort because when the bacteria have acquired a resistance to them there is nothing left except a world-wide catastrophe. With the aim of searching for honeys that have a high bactericidal capability a team at Cardiff's School of Pharmacy has been collecting honey samples from throughout Wales and will then screen them for activity against various bacteria including MRSA and C Diff. The search is for the specific plants whose nectar or pollen enhance a bactericidal effect in the honey. Wales is the ideal place for such research because it is the only country in the world where its entire flora has had its DNA analysed and bar-coded*. Well done the National Botanic Garden of Wales (NBGW) for completing this project.

The NBGW will identify the plants which contributed to the most powerful honeys. The team will then investigate the plants found in honey for the potential to develop new drugs. The Botanic Garden has 14 beehives and an in-house bee keeper, Lynda Christie, is providing key expertise in support of this project.

The joint University and Garden team are also looking for honeys which help bees resist pests and bugs. In particular, they are testing for resistance to the Varroa mite and the bacterium Paenibacillus larvae, responsible for American Foulbrood, one of the most destructive of all bee diseases.

Honey samples from the areas indicated on the map have been analysed so far.

Professor Les Baillie of the Welsh School of Pharmacy said: "A lot of drug development involves expensive laboratory screening of a huge variety of plant products, often without success. We're hoping to cut out the middle man and let the bees do a lot of the hard work,

guiding to us those plants which work. We're hoping the public can provide us with as much home-made honey as possible – they could supply the vital breakthrough in fighting these bacteria."

At the National Honey Show (October 2012) Jenny Hawkins from the Welsh School of Pharmacy said the honey from one particular apiary near Tywyn had showed particular promise. 38 different plants had been identified within the honey, but none were unique to this particular batch of honey and the proportions of each type of plant within the honey were again not particularly unique. When the team visited the Tywyn area they failed to identify any unique characteristics of the area, but Hawkins pointed out that they were particularly short of samples of honey from Mid and North Wales. It maybe that in these areas there are subspecies of the Welsh Flora that are contributing an important bacteriocide. The team does need more samples of honey. Contact HawkinsJ6@cardiff.ac.uk for details of how to send in your sample.

* This project followed a less successful attempt to baa code the DNA of sheep.

Curtis Underwood

(adapted from a Cardiff University in-house magazine)

Gregynog Apiary Report

We are down to 9 colonies at the apiary, which should be OK provided they make it through the winter. This is about the number we took into last winter, so no net increase on the year.

Apiguard has been applied and the bees put to bed for the winter. The oxalic acid application is due in January (see Toby's Top Tip, next article).

We need to have an official policy on how we sell nucs, queens etc from the apiary. We are unlikely to have many, if any, surplus nucs next year, so any new way of working would not come into effect until 2014 or 2015.

Dave Bennett

Apiary Manager

Clearly this bee would enjoy herself in a children's ball area, though the other kids would be upset when she flew off with all the balls. Even at the limit of the resolution of this picture you can see how the individual pollen grains adhere to almost every part of the bee before she packs it away in the pollen baskets on her legs.

LOOK OUT ! DUCK ! - the scary flying bee descends on an unsuspecting flower.

Some honey bees are more yellow than others

Don't miss the bee courses

You will see in the forthcoming events section that there are some bee courses coming up in the new year. Our old friend Brian Goodwin will be providing three days of courses at Gregynog. These will be a combination of classroom and hands-on in the apiary.

The first course is a one day session from 9:30 am to 4:30 pm on Saturday Feb 19th aimed at the new/novice beekeeper. A lot of information packed in, and great value at £30. A two-day Beekeeping course for those who have had a minimum of a 12 months of keeping bees will be held on the consecutive Saturdays 23rd Feb and 2nd March, again 9:30 am to 4:30 pm at Gregynog. Price of this course is £40, so excellent value for an intensive two day study.

Brian's courses have been very well received in the past and he is good at pitching the content of the course to the right level given the experience of the students. They are a great way to either get a flying start to your beekeeping future or rekindle the spirit of those of us who have lost a colony or two and want to get back on the horse.

He has a fair bit of equipment to get out and put back into his car, so if you can get there a bit earlier to lend a hand, that would be much appreciated. The course fees include coffee and tea, but please bring along lunch (or use the Gregynog cafe).

Note that the courses are subsidised by MBKA and hence are available to members only. Cheques should be made out to Montgomeryshire BeeKeepers Association and sent to MBKA, School House, Van, Llanidloes, Powys, SY18 6NP. For more information e-mail chairman@montybees.org.uk with the subject “Courses”.

Toby's Top Tip

If you take the crown board off to apply oxalic acid and find the cluster of bees right at the top, it usually means they are low on stores and could be given candy (you can heft the hive to double check).

Toby Beavan

The honey crop – the Holy Grail when antibiotics fail?

Honeybees make honey by collecting nectars that are rich in sugars and high in water content. They suck the nectar up from the bottom of the flower using their proboscis and store it in the honey crop during flight. When the crop is full, the bee returns to the hive and the nectar is placed in a cell. Thousands of bees fill thousands of cells and it takes days for the bees to produce honey from this nectar by reducing the water content.

Nectar attraction - Nectar is a rich source of sugars and therefore attracts many other insects besides bees, and other animals like humming birds and bats. Their beaks, feet, mouths, probosces and other body parts come into contact with the flower, leaving many kinds of micro-organisms (bacteria, yeasts and moulds), and even faecal residue, behind in the flower after their visit. These micro-organisms feed on the sugars in the nectar and start to multiply fast. Millions of them travel inside the honey crop of a bee back to the hive where the temperature is around 33–35 °C. This is an ideal temperature at which they could proliferate and it would be just a matter of hours before the nectar would be spoiled. Since it takes days for bees to make honey, some kind of protection needs to be in place.

The Holy Grail - Recently, we discovered that a previously unknown group of 13 different beneficial bacteria reside inside the honey crop of honeybees. They are probably the reason why the nectar is not spoiled in the hive. This group seems to be a Holy Grail of evolution, since our research indicates that these bacteria act as a barrier against unwanted micro-organisms.

Beneficial bacteria - Lactobacilli and bifidobacteria are included in a bacterial group called the lactic acid bacteria (LAB) as they produce lactic acid as their main end product. LAB are widespread in nature. In mammals, they are found along the gastrointestinal tract and in the vagina. They are considered beneficial because they protect their host against unwanted microbes and produce important compounds, e.g. vitamins and antimicrobial substances.

LAB are commercially important for their use in the food and biotech industries as they are involved in processing foods like chocolate, sausages, olives, vanilla, vinegar, yoghurt and probiotics. In addition, LAB have been used by humans for thousands of years in the preservation of food. The main reason for these applications is the production of compounds that inhibit or kill other micro-organisms competing for food and space. One interesting aspect is that some of these bacterial compounds (e.g. organic acids) are already used in beekeeping today to help bees fight diseases. The beneficial honey crop bacteria we

discovered constitute one of the largest bacterial groups ever found collaborating within one single organism.


Bee collecting pumpkin pollen

Bees are bakers - Bees do not only collect nectar from flowers; they collect pollen as well, which is mixed with honey from the honey crop. The resulting sticky ball called 'bee pollen' attaches to specialized structures on their legs for transportation back to the hive. In the hive, the bee fills cells with pollen and then covers the pollen-filled cells with a drop of honey. It is known that a fermentation process starts in this mixture in the hive due to the presence of micro-organisms, but the exact identity of the microbes involved has been a subject for research. During this fermentation process, which takes 2 weeks, the bee pollen changes to 'bee bread' that is loaded with nutrients from the pollen and serves as an essential food, not only for the bees and their larvae, but also for the honey crop bacteria.

The fermentation process makes the nutrients contained in the pollen available and preserves it from spoilage. Our research has identified the bacteria involved and revealed that bees, in producing bee bread, add all the beneficial LAB to the pollen when they collect it at the site of the flower.

Bee health - Honeybees are our most important pollinator and their health has come into focus during the last few years because of as yet unexplained conditions and diseases threatening this essential insect. Honey crop bacteria could potentially be of crucial importance for the well-being of honeybees, their pollination potential, and for their production of honey and bee bread. These bacteria have already been shown to inhibit the bee disease American foulbrood. With further studies, we hope to understand more about the importance of these bacteria and their impact on the honeybees' immune system and larval defences, and on bee foods. We are currently investigating how some of the drugs fed to bees affect the bacteria and how this may impact both the honeybees' defence against diseases and their food production.

An interesting parallel - Sir Alexander Fleming received the Nobel Prize after his discovery of penicillin, a potent antibacterial substance produced by the mould Penicillium. Penicillin and the huge range of antibiotics subsequently developed have saved many lives, but our overuse of antibiotics is linked to increasing bacterial resistance. We are in desperate need of alternative tools to solve this worldwide problem. The group of 13 LAB species discovered in the honeybee have evolved together in the honey crop and each species of bacterium can produce several different antimicrobial substances, resulting in a myriad of compounds. Working with a large arsenal of antimicrobial substances seems like a good approach to withstand development of resistance by other micro-organisms, a strategy already implemented by bees.

Final comments - Mature honey (with a water content of less than 20%) sold in shops does not contain any viable, beneficial honey crop bacteria. The LAB are only present and active in fresh or wild honey and only for a couple of weeks. This may be one reason why honeys differ in their antimicrobial properties. The results of our research may explain why humans have used honey as a cure, e.g. for sore throats and wound healing. Millions of bacteria of each of the 13 species of LAB found in the honey crop, in combination with their secondary metabolites, end up in fresh honey during its production.

A pollen grain in a bee's honey crop

The LAB that have evolved with the honeybee have been a potent weapon used by bees to defend themselves against microbes. In our ongoing research, no microbe yet examined has been able to withstand the myriad of compounds produced by honeybee LAB. The use of honey as a folk medicine has probably been revealed and may be the source of a natural antibiotic alternative for humans.

Alejandra Vásquez & Tobias Olofsson, Lund University, Sweden

(adapted from article in Microbiology Today, with thanks, www.microbiologyonline.org.uk)

Apiary Training Days

Our apiary manager, Dave Bennett, with the assistance of SBI John Beavan, are coming up with a list of dates for the 2013 apiary training. These were very successful last year - well attended and found useful by those who did.

The exact dates and content for 2013 has not been confirmed at the time of printing, but we will circulate the details by post, e-mail and on the website as soon as we have it. It will be largely similar to the 2012, but if you want to suggest anything new or different, please get in touch with Dave by phone or e-mail (see page 19).

Early Swarm

Now is the time to renew your MBKA membership. The “early swarm” renewal scheme is designed to save you money and ensure that you are covered from 1st January each year for the notifiable diseases covered by the BDI scheme. If renewal is delayed until after March 31st the insurance cover does not begin until 40 days have passed from the date of renewal. Please don’t delay and lose cover.

Association membership under the early swarm scheme for 2013 is £25.00, which includes the BDI cover for 3 colonies. If you have more than 3 colonies, or if you haven't received the Early Swarm newsletter, then check with Roy Norris (see page 19).

Roy Norris

MBKA Annual Dinner

Friday January 25th 7pm

Maesmawr Hall, Caersws

Chef's Homemade Soup of The Day

Chilled Melon & Winter Berry Cocktail with Lime & Ginger Syrup (V)

Chicken Liver & Brandy Pate with Crostini & Red Onion Marmalade

Pea & Bacon Risotto

Traditional Roast Turkey served with Chipolata, Cranberry & Chestnut Stuffing & Gravy

Roast Topside of Beef with Yorkshire Pudding & Red Wine Gravy

Grilled Fillets of Seabass with Crushed New Potatoes & Chives in a Lemon Butter

Mushroom, Spinach & Cheddar Cannelloni (V)

Christmas Pudding with Brandy Sauce

Glazed Lemon Tart with Raspberry Coulis

Crème Brulee with Shortbread Biscuits

Forest Fruit Pavlova, with White Chocolate Sauce (V)

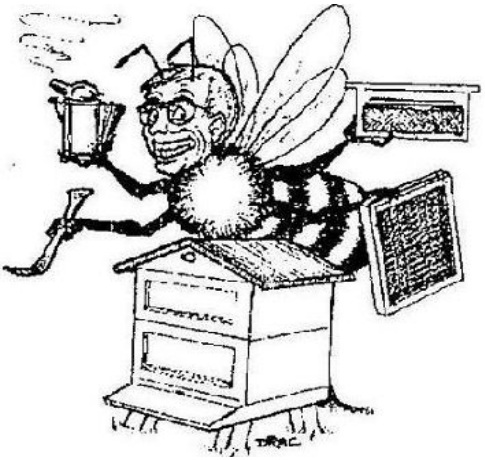
Followed by Coffee and Mince Pies

V = suitable for vegetarians

This is open to MBKA members and their guests. To book your place(s) return the completed form to the address given on it and enclose a cheque payable to MBKA for the full amount (£22 per head). Forms are available on the web site, by e-mail and, for those without computer access, there should be one in your BeeHolder envelope.

Ring Chris on 01686 413968 if you need help obtaining a form.

Surprise entertainment as usual!



The Bee Inspectors

There are three seasonal bee inspectors covering Montgomeryshire. Their areas overlap with other counties, so it isn't as though Montgomeryshire has three bee inspectors all to itself! To arrange for a visit by a Bee Inspector contact the regional bee inspector, Frank Gellatly, who will make the necessary arrangements. There contact details are as follows.

RBI Frank Gellatly tel: 01558 650588 francis.gellatly@fera.gsi.gov.uk

SBI Peter Haywood tel: 01758 721349 peter.haywood@fera.gsi.gov.uk

SBI John Beavan tel: 01824 707286 john.beavan@fera.gsi.gov.uk

SBI David Coles tel: 01497 820419 david.coles@fera.gsi.gov.uk

Also of possible use is the phone number for the central science lab, where any samples of bees taken by inspectors are sent for testing.

CENTRAL SCIENCE LAB: 01904 462510

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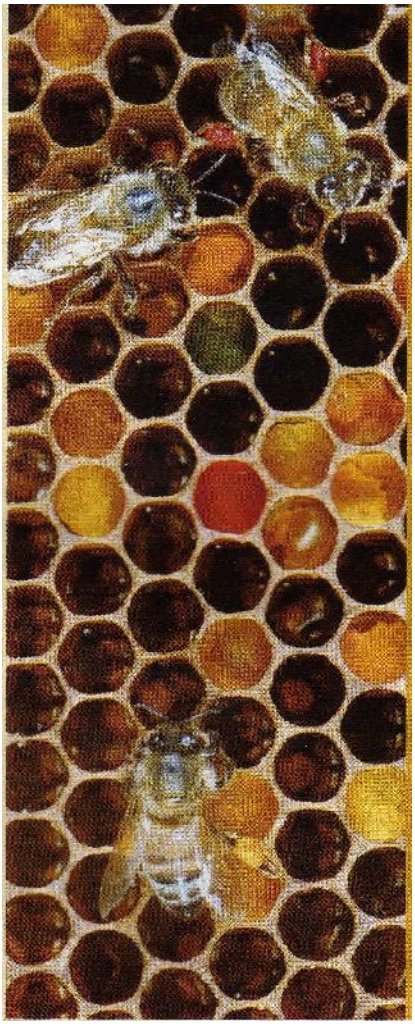
Picture right : Bee bread, as described in the article “The Honey Crop” p13, comes in many colours (but just the one shape). *W. Treat Davidson, Science Photo Library*



Picture above : “Well, yer knows that not orl skep makers looks like me ...” *Cambridgeshire BKA, via eBEES*