Apis-UK The Electronic Beekeeping Newsletter

Apis-UK Issue No.42 May 2006

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In the month following the serving of the Queen's justice on our Norfolk honey scammers we can return in Apis UK to reporting on the better things of life amongst bees. Our last issue of Apis UK was our first under the new production team of Ron Fisher, Steve Loughborough and Rod Earp and as you saw, it wasn't bad at all. Producing something like Apis is not that easy and takes up many hours of free time of the production team and of our very much valued contributors who make reading Apis worthwhile. Thanks to all of them and let's hope that they continue to do such a splendid job for many issues to come.

With the diminishing number of pollinators available for our crops, the true value of these insects is gradually becoming better known and true to form, now that it is hitting peoples' pockets in the form of lost crops and therefore lost incomes, a better understanding is beginning to set in not only about honey bees, but also about the myriad of other pollinating insects which vary in usefulness and effectiveness from blow flies to specialised solitary bees. To better help this understanding, we report this month on a new, short and snappy film 'Dancing with Bees' which takes you right around the bee world in 10 short minutes. See our review of the film below, go and buy it and show it to all your friends. Don't be the only beekeeper in town whose friends think you keep bumblebees. (Unless you do)! We also report on a book on pollinators that can also help to eradicate ignorance of this all-important subject. In similar vein, we reproduce a report from the USA that actually details the monetary value of bees and other pollinators to the American economy. Again this is a way of putting the matter before the public that

the public will understand. Let us hope that firstly the public will read it and secondly that they will indeed understand the significance of the survey.

Another new hay fever cure hits the market in this issue and we take a look at aircraft design, corporate decision-making, the colour of honey and its importance and our quote is the most intriguing yet. I forget who the brainy person was who said 'One thing we learn from history is that we never learn anything from history', but if you learn just this historical quote, it could lead you to a longer life. The recipe is tremendous and is not 'just another cake' (said to me yesterday). It is a work of history, a classical example of the meeting and harmonising of two civilisations and two religions, and even though eating it means a mass of dust and crumbs everywhere, it is a great taste.

Feeding bees has often been a contentious issue. When, how, how much, in what form, how many times etc etc. We report on one way of feeding bees that can either give your bees a tremendous boost - or it can poison them. Chad confesses to his crimes and gives us a homily on greed and forgiveness and our historical note contemplates that most interesting of insects, the honey bee.

The last editorial photo asked us the question 'What is going on here?' The right answer was sent in by Keith Malone of Alaska. See his reply in the Readers' Letters section below. The beekeeper is a colleague of mine, a Canadian working in New Zealand and in this case, a pallet of four hives had dropped off the unloading forks and knocked over another pallet load, and the metal straps had broken. It always happens at night, in the middle of nowhere, usually when it is raining and always when you are tired out. The bees start crawling up everywhere, become really fractious and somehow develop the overnight ability to sting through bee suit, trousers and underpants in one swift and flowing movement and still have some to spare. The only thing you can do is just set to, grit your teeth and get on with it, and of course, get it done by daybreak.

Next month we take a look at honey quality, apes and their habits, the sociality of sweat bees and how biting your fellow can stand you in good stead. Plus of course very much more from the world of bees and beekeeping, so please keep reading and keep subscribing to Apis UK, and if you want something different, or for us to report on a particular subject (more or less connected with bees and beekeeping), please let us know and we will do our best.

If you speak French and want something different and very interesting to read, take a look at Hubert Guerriat's online subscription magazine. Hubert operates from Belgium and produces a very professional magazine called Mellifica in Pdf format. For further information on this

for our French speaking readers please email Hubert at Hubert.guerriat@mellifica.be or look at the website www.mellifica.be

Finally, I came across this quote from 1992. It may be out of date now, but it is certainly something to think about.
'The supercomputer can compute at the rate of one billion computations per second. The honeybee's brain can compute one billion computations in 1/1000 of a second.'
Sejnowski, T.J. and Churchland, P.S., 1992, Byte Magazine, October, 1992, p. 137. Sejnowski and Churchland are well recognized in the field of neurobiology and in the field of computational neuroscience.

I hope that you enjoy reading this edition of Apis UK and write in if you can work out what is going on here! It caused me to have to get up at 0200hrs one dank morning and kept two beekeepers and a host of others at it for three days.

David Cramp. Editor

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UK News items
In this section we look at news items of local interest to UK beekeepers sent in by Pam Hunter. As Apis UK now attracts readers from all over

the world, your editor would welcome any input from overseas correspondents as well.

Vital Pollinators: honey bees in apple orchards
An article in the April edition of the Biologist, the official journal of the Institute of Biology, describes the value of honey bees as pollinators in the UK. The authors, A Cuthbertson & M Brown are from the Central Science Laboratory, UK. There are an estimated 274,000 colonies of honey bees kept by approximately 44,000 beekeepers in the UK, with about 75% being in England, the remainder being in Wales, Scotland and Northern Ireland.

Apple orchards form a major part of the horticultural industry in the UK, covering some 27,000 hectares. Insect pollination of apples is essential for a good crop since fruit growth and development is stimulated near fertilised and developing seeds. The apple has five pistils, each with two ovules: a total of ten potential seeds. If pollination is inadequate and only a few of the ovules are fertilised, misshapen fruit can result. Since most apples are grown in temperate regions, like the UK, where the spring weather during blossom time can be unfavourable for bee flights, colonies of honey bees in the orchards can increase the chance of good pollination. It has been estimated that two colonies are required for each hectare to give good pollination.

There can be problems in placing colonies of honey bees in orchards. The bees are vulnerable to the sprays that may be used to control pests and diseases in orchards and the bees themselves are susceptible to a range of pests and diseases. The National Bee Unit has a Bee Health Programme designed to safeguard the honey bee population and this includes pest and disease diagnosis and consultancy services to industry and government. Studies are also undertaken on the impact of pesticides on non-target species in the orchard environment.

Bee Improvement and Conservation, Number 23, Spring 2006
(The official journal of the Bee Improvement and Bee Breeders Association)

Some Queen Rearing Statistics by Tom Robinson, York, UK.
This article gives some fascinating facts from an experienced beekeeper on the success that people might expect who are trying queen rearing for the first time. It is easy to get disillusioned when first attempting queen rearing by a low rate of success, especially with the numerous articles in the bee press emphasising the problems.

Tom outlined his technique which involves converting a good, strong, queen-right colony into a queenless colony with no eggs or young larvae available to the bees. After 6 hours 24 to 48 hour larvae are introduced from the chosen breeder queen. The colony is fed heavily and pollen

must be available. Approximately 80% of the larvae can be converted into queen cells, but commonly 10% of these will not emerge of be malformed. This gives an overall rate of 72% viability.

He detailed the results he had obtained using the Jenter system and mininucs in 1990-1994. The average for each year across May to August was 46%, 62%, 59% and 66% respectively. In recent years (post-varroa) the only year when a 100% conversion from cells to queens occurred was in 2000 when the weather was favourable and the colonies were on borage, a crop that provides excellent nectar flows. In 2003 184 cells produced 96 queens (52%). In 2004 the weather was very poor and there were also technical problems leading to a low rate of only 27 queens from 92 cells (29%). In 2005, also a year with poor weather, 132 cells resulted in 56 queens (42%). Figures quoted from those experienced in rearing queens give overall mating successes of 43% (Michael MacGiolla Coda) and 50% (Denmark)

Some thoughts on Drone Laying Queens by Bill Spence, South Riding.

Drone laying queens were a major problem in 2004. The author describes the erratic weather pattern during that season with very few opportunities for young queens to fly and mate adequately. The borage crops were poor, with only about half the normal yield, and hives could not be moved from some sites as they were water logged. In 2005 the situation was better, with a far higher success rate. Bill describes how he raises drones in specially selected colonies so that the area can be flooded with drones. They are fed frames of pollen to ensure that they receive a good diet. He suggests that 100 drones are requited for every queen.

Queen Rearing in Denmark by Tom Robinson. BIBBA Visit

A group from BIBBA visited Denmark to see the Danish Queen Breeding 'Ring' in practice. The main characteristic of queens selected for breeding is gentleness, and Tom remarks that they never needed any protective clothing or smoke to handle these bees. Grafting of day old larvae starts on May 20th and continues for 60-64 days until July 22nd. The larvae are put into a cell raiser for 20 hours and then put into queen-right colonies over a queen excluder in 'finisher' colonies. Tom gives full details of the production of the starter colonies. Pollen is fed to the cell raiser. The statistics provided by the group were from 100 grafted day old larvae 80% of sealed cells are produced and put in the incubator. 90% of these hatch (72 queens). Of these 80% mate, giving a final number of fertile queens as 50%.

Information sheet no. 3

Melbourne, Australia 9 – 14 September, 2007

The Call for Abstracts has been posted on the Apimondia website which is www.apimondia2007.com. Go to the website then click on the "Call for Abstracts" in the menu on the left hand side.

We would encourage bee researchers and beekeepers from all around the world to consider submitting an abstract with a view to presenting a paper at Apimondia 2007. We will be looking for papers on various topics. Please note the dates for acceptance of the abstracts and also the deadline for registration by presenters.

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It may seem a long way off but for those coming to Australia from overseas please visit the website and look at the Travel Information. You will need to obtain a visa to come to Australia and, except for New Zealand residents, this visa **must** be obtained before leaving home. Secure your visa early to avoid any delays.

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We are pleased to announce that His Excellency Major General Michael Jeffery AC CVO MC, Governor-General of the Commonwealth of Australia has agreed to be the Patron for Apimondia 2007. To learn more about His Excellency and the role of the Governor-General of the Commonwealth of Australia go to www.gg.gov.au

Trevor Weatherhead (Organising Committee) queenbee@gil.com.au

If you no longer wish to receive these information sheets,
please contact Trevor Weatherhead at the email address above.

City Bee Country Bee

This French report will give some cheer to all those city beekeepers in the UK who keep their bees on small allotment sites and rooftops in London and other cities and towns. Bees reared in cities are healthier and more productive than their country cousins, a study by French beekeepers' association Unaf has found. Urban bees enjoy higher temperatures and a wider variety of plant life for pollination, while avoiding ill-effects of pesticides, the study said. At the same time they can filter out city pollution such as exhaust fumes. The study prompted Unaf to start a campaign promoting beekeeping in urban parks, on balconies and on roofs. Beekeepers say urban bees' productivity can be up to four times that of their rural counterparts. "In town, the bees go out more," apiarist Jean Paucton told AFP news agency. Another beekeeper said urban hives had maintained a steady mortality rate while in the countryside many bees were dying. The Union of French Apiarists (Unaf) is campaigning against pesticides, which it says are destroying the industry. It has expressed particular concern about Gaucho and Regent, two banned chemicals, the effects of which are still felt in rural areas. "These molecules are neurotoxins which disorientate the bee and make it impossible for it to find the hive again," Unaf president Henri Clement told AFP. But others have blamed diversification for the decline, saying attempts by beekeepers to increase production by importing unadapted foreign varieties of bee have backfired.

A BETTER CURE FOR HAY FEVER

With the UK having around 13 million hay fever sufferers, it may come as heartening news to many that there is relief at hand and the medicine is not bitter. (Not for most that is). Scientists have discovered kissing could be the perfect cure for the condition. They found a 30-minute kiss could dampen the body's allergic reaction to pollen. Test showed it relaxed the body and reduced production of histamine - a chemical cell given out in response to allergens. Dr Hajime Kimata, of the research team in Japan, said: "The results indicate for the first time that kissing may alleviate allergic responses." Some 24 men and women with hay fever were told to spend half an hour kissing their partners. Blood samples were taken before and after to test levels of immunoglobulin E (IgE), which prompts the release of histamine into the blood, triggering symptoms of hay fever and asthma. Most sufferers rely on anti-histamines to relieve their symptoms. However scientists have known for years that stress can make responses to common allergens worse. The resultsof the research showed a significant drop in IgE after the session .Dr Kimata added: "It is tempting to speculate that relaxation by kissing may decrease IgE production."

HONEY AND WOUNDS

We have long heard that honey is beneficial in wound treatment, and even in the early years of the last century and right back to

the ancient Egyptians, anecdotal evidence and practical use showed us just how valuable honey is as a medicinal substance. More recently, clinical trials and research institutions have shown us that the anecdotal evidence points towards the truth and now, a review article summarises the scientific data.

The review article appeared in the most recent issue of SAGE Publications' International Journal of Lower Extremity Wounds. Scientists performed 22 trials involving 2,062 patients treated with honey, as well as an additional 16 trials that were performed on experimental animals. Honey was found to be beneficial as a wound dressing in the following ways: honey through its antibacterial quality not only rapidly clears existing infection, it protects wounds from additional infection, debrides wounds and removes malodour, reduces oedema, minimizes scarring and stimulates growth of granulation and epithelial tissues to speed healing. The review article was written by Dr. P.C.Molan of New Zealand's University Waikato. He noted that,although the many randomized controlled clinical trials strongly support the use of honey in wound care, the trials may not have been double-blind, a form of testing difficult to achieve because honey is a very recognizable substance. Molan concludes, "the barrier to using honey that has existed for many clinicians who have been constrained to using only licensed products has been removed now that honey is available in the form of various sterile products licensed for use in wound care. Clinicians should check the evidence that exists to support the use of honey."

The article "The Evidence Supporting the Use of Honey as a Wound Dressing" and further information about the Journal can be found on The International Journal of Lower Extremity Wounds' website at http://ijlew.sagepub.com.

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From The USA, Jim Primus sends us the following research news report taking a look at the regulation of honey bee lifespan. Most beekeepers will know that this can vary enormously, well here is what happens.

Regulation of honeybee lifespan

The insect fat body consists mainly of thin layers of cells spread against the body wall of the abdomen. The fat body synthesizes several storage proteins that build-up in the fat body and the hemolymph. One storage protein is called vitellogenin, a female-specific hemolymph storage protein that is used by developing oocytes. Moreover, in honeybees, vitellogenin is also synthesized by other caste members (workers and drones) who do not lay eggs. Vitellogenin is used for various metabolic purposes and the synthesis of brood food. Vitellogenin is the most

abundant protein in the hemolymph of hive bees and winter bees (30-50% of total). Foragers have low levels of vitellogenin. The rate of vitellogenin synthesis of workers is approximately 5% of a laying queen, and in drones, 1%. The cell machineries that regulate vitellogenin synthesis appear very similar in the nematode (worm), fruit fly, and bee. There is one major difference in that reduced synthesis of vitellogenin in the nematode and fruit fly increases lifespan whereas in the honeybee, synthesis of vitellogenin is related to an increase in bee longevity. In the evolution of social insects such as the honeybee, selection of the queen caste would have been favored by a positive relationship between vitellogenin activity and lifespan. This is because the reproductive activity and longevity of the queen (1-5 years) are needed for colonies to increase in size to allow swarming (reproduction at the colony level) and drone production. Further, the continuing care of offspring by surrogate parents (workers) would have also favored a positive relationship between vitellogenin synthesis and longevity. In the January 24th issue of the *Proceedings of the National Academy of Sciences*, Siri-Christine Seehuus and coworkers at the Norwegian University of Sciences, University of Rostock, and Arizona State University hypothesized that vitellogenin counteracts aging by protecting bees from oxidative stress. Oxidative stress can cause deficiencies in cell function, abnormalities and death. To test this hypothesis, the researchers examined the effects of the oxidative damage agent paraquat on the vitellogenin molecule and on bees in which the activity of the vitellogenin gene was normal (vg+) or reduced (vg–) by RNA (a type of nucleic acid) interference. Vitellogenin was found to be preferentially oxidized, and vg– bees, which suffered higher levels of oxidative damage to their fat body organ, had significantly reduced lifespan. When workers switch from nest activities to foraging duties they normally survive only 1-3 weeks more. One reason that foragers may have low levels of vitellogenin is that energy is conserved by not expending it on a storage protein of little value to the expected short life expectancy of the forager.

Again from Jim Primus, we now take a look at decision making in the swarm.

How swarms follow the scouts

One of the most fascinating traits of honeybees is the performance of the colony group as a seemingly single entity. An excellent example of this group decision-making is a swarm of honeybees locating a new home. Early studies by Lindauer in the 1950's showed that scout bees performing the waggle dance communicated the location of a possible new nest site. He also observed that initially scouts dance for different sites but shortly before lift-off, the scouts attain unanimity in their dances. Thomas Seeley at Cornell University revisited this decision-making process in 1999 by utilizing video recording techniques to construct a complete record of each scout bee's dance. With artificial swarms composed of 1,000 individually marked bees, he confirmed Lindauer's observations and extended them to show that only a small minority of dancers ever dance for more than one site. He further observed that dancers for non-chosen sites cease dancing, and this was the mechanism for consensus building among dancers. Finally, he made the discovery that almost half of the bees dancing for the chosen site cease dancing before completion of the decision-making process. This is in contrast to the increase in waggle dances performed by nectar foragers. A puzzling question left unanswered was how does the swarm find its new home when the majority of bees in the swarm are uninformed of its whereabouts. In the January 2006 issue of *Animal Behaviour*, Seeley describes experiments that test if the uneducated bees follow their nose to the new home. It was hypothesized that pheromones released from the Nasanov glands of scout bees flying in front of the swarm point the way. Two types of swarms were prepared: large ones (11,500 bees) for observing swarms in flight, and small ones (4,000 bees) to test the "smell" hypothesis. All of the bees in the small swarms (5 experimental swarms) had their Nasanov glands sealed with paint. The control swarm had paint applied to the thorax, leaving the Nasanov glands clear. Seeley also studied if the swarm merely follows the scouts visually, the vision hypothesis. They filmed the flights of

normal swarms and those that had their Nasanov glands sealed. All swarms successfully reached their destination bait or natural (tree) nest site, ruling out the olfaction hypothesis. What they did photographically identify was fast flying bees or "streakers", most likely scout bees, that perhaps visually guided the uneducated bees to a new home. As Seeley points out, however, he will need to design "mini blindfolds" to test definitively the visual signal theory.

AIRCRAFT DESIGN. CAN BEES SHOW US THE WAY?

We've all seen the classic photos of bees approaching the hive with their legs dangling and wondered why they adopt such an uncomfortable looking posture. Well there may be an answer! Unlike airplanes, leaving their landing gear down makes bees fly faster. When orchid bees extend their hind-legs they pitch forward to achieve maximal speed and the legs produce lift forces to either side that help prevent the bee from rolling.

"The hind-legs resemble airplane wings, which probably explains why they also generate lift", says Dr Stacey Combes from the University of California, Berkeley who presented her research April 4 at the Society for Experimental Biology's Annual Main Meeting in Canterbury, Kent. This research is interesting as it could be applied to design miniature flying machines to be used for search and rescue missions. "It may be helpful to be able to reduce the number of control components needed by using one structure (like the orchid bee legs) to control both pitch and roll", speculates Dr.Combes. The researchers perform their experiments by encouraging the bees to fly in an outdoor wind tunnel using an incentive of aromatic oils. The bees can reach a maximum

speed of 7.25 m/s, but at these speeds they lose rotational stability: "They roll all the way to the side or often upside down, and crash to the ground", observes Combes. This means that what limits the bee's speed is not muscle power or the amplitude of its wing beat, but the pitch of the body balanced with the resulting rotational instability. "Having the legs extended generates stabilizing lift forces and helps reduce the moment of inertia and the slow rolling, similar to when a spinning figure-skater extends their arms", explains Combes.
Source: Society for Experimental Biology

THE ARTIFICIAL BEE EYE

Beekeepers interested in the morphology of bees will know that a bee eye is made of thousands of lenses. This wonderful system has now been replicated. An artificial insect eye that could be used in ultra-thin cameras has been developed by scientists in the US. The dimpled eye contains over 8,500 hexagonal lenses packed into an area the size of a pinhead. The dome-shaped structure, described in the journal Science, is similar to a bee's eye. Researchers from the University of California, Berkeley, say the work may also shed light on how insects developed such complex visual systems.

"Even though insects start with just a single cell, they grow and create this beautiful optical system by themselves," said Professor Luke Lee, one of the authors on the paper. "I wanted to understand how nature can create layer upon layer of perfectly ordered structures without expensive fabrication technology," he said.

As a result, the team of bioengineers came up with a relatively cheap and easy method for creating the artificial eyes that may in part mimic natural processes. Compound insect eyes usually consist of hundreds of tiny lens-capped optical units known as ommatidia. For example, a dragonfly has 30,000 of the structures in each eye. Individual ommatidia guide light through a lens and cone into a channel, a rhabdom, which contains light-sensitive cells. These are connected to optical nerve cells to produce the image.

Note
Honey bees have two compound eyes that cover a large part of the head surface. Each compound eye is composed of individual cells, the ommatidia (singular ommatidium).. Each ommatidium is composed of many cells, usually including light focusing elements (lens and cones), and light sensing cells (retinal cells). Workers have about 4,000-6,000 ommatidia but drones have more 7,000-8,600, presumably because drones need better visual ability during mating. As in most insects, bees' eyes are not designed, as our eyes are, to see high resolution images. Rather they see a mosaic image but are better than us at motion detection. Bees also have three simple eyes, the ocelli, near the top of their head which are simple eyes that do not focus but provide information about light intensity.

A further and quite interesting (but different) look at bees and bee eyes in the theological context can be seen at **www.creationdesign.org/ Honeybee.html**

USE NATIVE BEES FOR POLLINATION

"200 alfalfa leafcutter bees can do the same amount of pollination that a 20,000 honey bee hive can".

This quote arises from some very interesting research carried out by scientists at the Texas A&M University in the USA.

If you build it, they will come. Native bees that is. And when native bees do come, they may be a hundred times more efficient as pollinators than are honeybees, said Jeff Brady, research assistant with the Texas Agricultural Experiment Station. Estimates indicate perhaps more than 500 native bee species in Texas alone. Each may be adapted to specific crops, and each may have a different preference for nesting sites, said Jack Brady, research assistant with the Texas Agricultural Experiment Station in Stephenville.

Native bees offer an alternative because they are resistant to both the varroa and tracheal mites. And because they do not live in hives, native bees are not at risk of being overcome by Africanized bees. Native bees, also called solitary bees, do not live in collective hives as do honeybees. They build nests in tiny holes or tunnels that they find, typically in trees and shrubs. Unlike honeybees, who have workers with specialized tasks, with only a part of the hive collecting pollen, each native bee is "on her own," and each is a potential pollinator, Brady said. Each native bee deposits her collected pollen as small balls inside the tunnel of a nest, then lays an egg, and seals it off with mud or circular pieces of leaves. She'll then collect more pollen, deposit another pollen ball then lay another egg and so on. Depending upon the species of native bee and the depth of the nest, the female may lay as many as 15 to 20 eggs in a single nest, sealing each egg off in its own cell with its own pollen ball.

She may make as many as 100 rips to and from flowers to gather pollen for each of these eggs. And while honeybees hover around flowers taking pollen when and if they can, many native bees may have evolved so their actions on the flower actually trigger pollination.
"You can actually find a native bee that's been (evolutionarily) tailored to a specific crop," Brady said. For example, some native bee species are particularly suited – having adapted their life cycles – to crops such as peaches, blackberries or watermelons. For example, one species is dormant or in developmental stages for 11 months of the year, and only emerges when crops such as melons are pollinating. Other species have adapted to row crops such as alfalfa may be active for most of the year. There's a great deal of genetic variance, Brady said, with more than 500 native bee species in Texas alone. Each may be adapted to specific crops, and each may have a different preference for nesting sites.For these reasons and others, for a specific crop at least, native bees, such as the alfalfa leafcutter bee, may be much more efficient pollinators than honeybees, Brady said. "Two hundred alfalfa leafcutters can to do the same amount of pollination that a 20,000 honeybee hive could."
Honeybees have other advantages however, most notably their honey production. Because humans have cultured them for centuries, Brady said, they offered some advantages to the agricultural producer who wished to ensure there were enough local pollinators for his crop. He or she could simply establish hives near the crop. And although honeybees aren't as efficient pollinators as native bees, they make up for it in the sheer brute force of numbers. But these advantages have waned as both wild honeybees and cultured honeybees have fallen prey to parasitic mites and Africanized bees.Living in hives, honeybees have strength in numbers, offering the collective protection from enemies. (Except varroa and SHB etc. Ed). Native bees, because of their solitary nature, are often at the mercy of predators, such as woodpeckers and parasitic wasps.

If you are interested in the subject of pollinator bees and their protection, take a look at a handbook on the subject sold by Bees for Development. See below for more on this.

BEES AND OTHER INSECTS WORTH BILLIONS NEW RESEARCH SHOWS

Billionaires in action

It comes as a surprise to many people that bees and other insects are such an important part of the ecology of the planet, but the truth is that bees are so important that without them, life would be difficult if not impossible. Their value can best be explained to the average human in terms of money and in a recent survey conducted by Cornell University entomologist John Losey, who co-authored a study he shows that the dollar value of some of those insect services is more than $57 billion in the United States annually. The research appears in the journal BioScience Today (April 1). "Most insects tirelessly perform functions that improve our environment and lives in ways that scientists are only beginning to understand," Losey says. "Don't let the insects' small stature fool you - these minute marvels provide valuable services." The figures are truly astonishing. The study found that native insects are food for wildlife that supports a $50 billion recreation industry, provide more than $4.5 billion in pest control, pollinate $3 billion in crops and clean up grazing lands, which saves ranchers some $380 million a year. And these are "very conservative" estimates that probably represent only a fraction of the true value, reports Losey, associate professor of entomology at Cornell.

This analysis of the economic value of these insect services is the first analysis of its type, said Losey, who co-authored the study with Mace Vaughan, Cornell conservation director of the Xerces Society for

Invertebrate Conservation in Portland, Oregon., which works to protect native insect habitats through education and research. Insects are an integral part of a complex web of interactions that helps put food on our tables and remove our wastes. Humans - and probably most life on earth - would perish without insects, Vaughan said. Losey and Vaughan's study focused on the economic value of four particular services -wildlife nutrition, pest control, pollination and dung burial - selected because robust data were available for an analysis. "A lot of value is added to the economy by insects, but most people just don't realize it," said Losey. "When considering the allocation of conservation resources, or the management of natural habitat, we must think about this value to make sure that insects can continue to do their beneficial work. "We know how to repair roads and other components of our physical infrastructure, but our biological infrastructure is vulnerable to degradation too," said Losey, an applied insect ecologist. "If we do not take care of it, it will break down and could seriously impact the economy." "In fact in many places - crop pollination, for example - the cracks in the infrastructure are already showing," says Vaughn.

Using published data, Losey and Vaughan compared the values of each service at current levels of function to theoretical levels if these serves were absent. For wildlife nutrition, the researchers used census data on how much is spent annually on observing or hunting wildlife, and what proportion of the animals in those categories depend on insects for nutrition. For pest control, they looked at the amount of damage now incurred by pests, and, knowing that 65 percent of pests are controlled by other insects, calculated the losses if predators or parasites weren't going after their prey. For pollination, they looked at the value of the crops known to be insect pollinated and subtracted the value of those pollinated by domesticated honeybees. For dung burial, they estimated the losses if dung beetles did not clean nearby plants and cattle environments, which would deter cattle from eating the plants and attract more flies and parasites that would have to be controlled. They also calculated how much fertilizer would be needed to compensate for the nitrogen not being returned to the soil so promptly by the beetles.

But there is more. The analysis did not include such important insect services as decomposing carcasses, garbage and trees (thereby decreasing the likelihood of forest fires); producing honey, shellac, dyes and other products; being used in medicine or as a source of food for animals other than those used in hunting, fishing and birding; and providing a direct source of food for humans. Based on their analysis, Losey and Vaughan call for greater investment in research on the ecological functions of insects so that the services they provide can be conserved or even enhanced.

The source of this news extract is Cornell University in the USA and appeared in the journal 'BioScience Today' on April 1 2006.

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Ian Rumsey continues his fascinating series on gravitomagnetism –

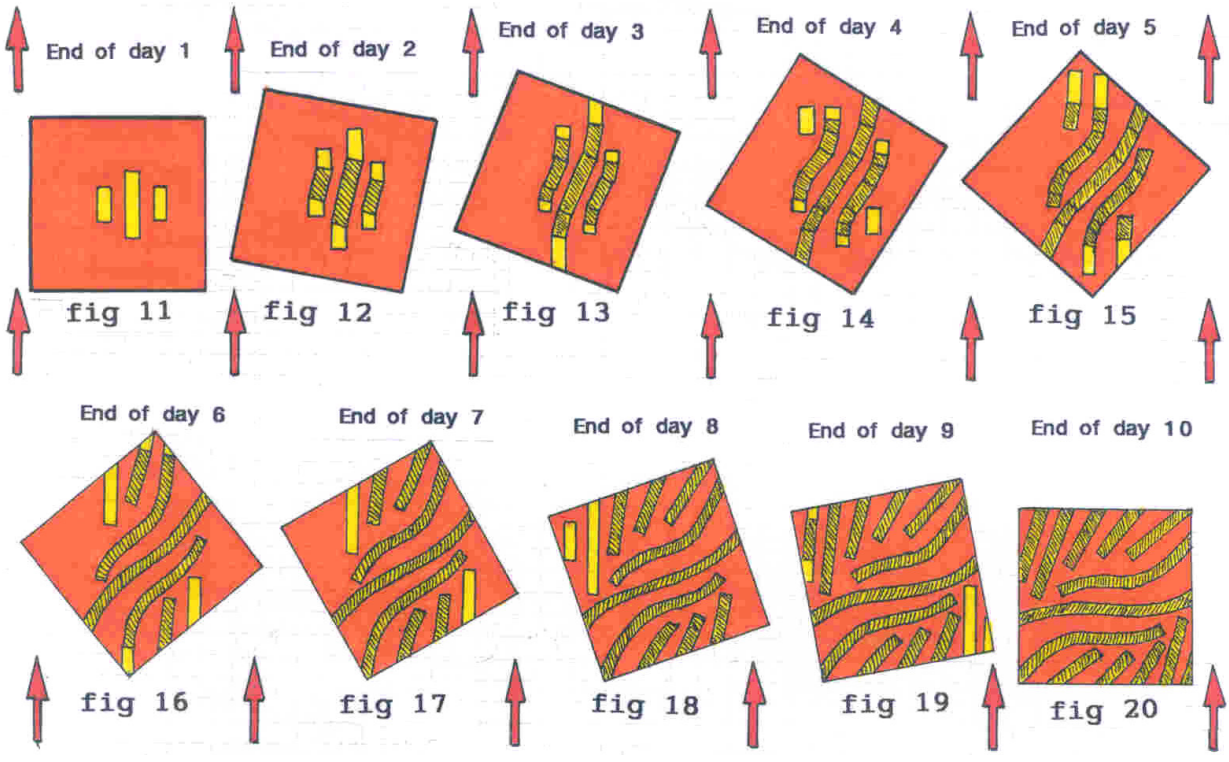
BEES AND ROTATING COMB Part 2.

Ian Rumsey

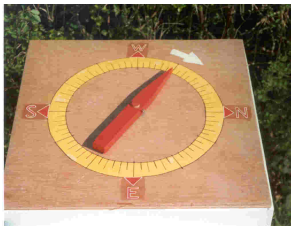
It is now necessary that consideration be given regarding the rate of rotation. In a 9 inch square inner hive one obtains 6 combs, 9 inches long which is 54 inches of comb across the hive. I would estimate on average a swarm would complete this comb attachment to the roof

of the box in say 9-10 days. This averages comb attachment at some 5-6 inches per day. To obtain the maximum effect the inner hive would require to turn through 90 degrees during this period which works out at 10 degrees per day. If the inner hive is turned clockwise 10 degrees at the end of each day, after the introduction of the swarm, this would appear to be a reasonable approach particularly as it will take the bees say 6 hours to change their minds regarding alignment after each 10 degree adjustment. So, under these arrangements, what may we expect.
If no rotation of the inner hive occurred and the inner hive was placed square facing East towards the oncoming gravitomagnetic field, as depicted by red arrows, the comb over the first 10 days may be expected to appear as figs 1-10.

However, if a 10 degree clockwise movement was applied at the end of each day, and the subsequent new comb constructed followed the new East-West alignment, then the comb construction may be expected to be modified as figs 11-20.



As may be seen a considerable change in comb construction could be expected due to this daily 10 degree movement, if our theory is valid. The hive is built and assembled. The photos taken.(as shown below) The swarm is introduced. Let us retire and, at our leisure, await the pleasure of our bees.

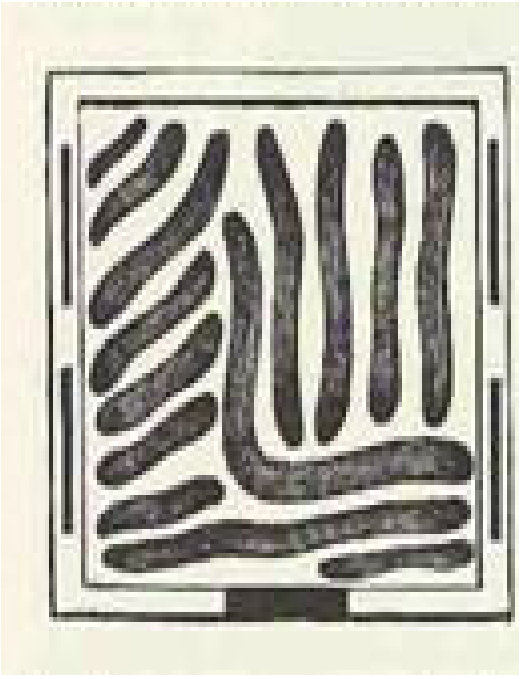


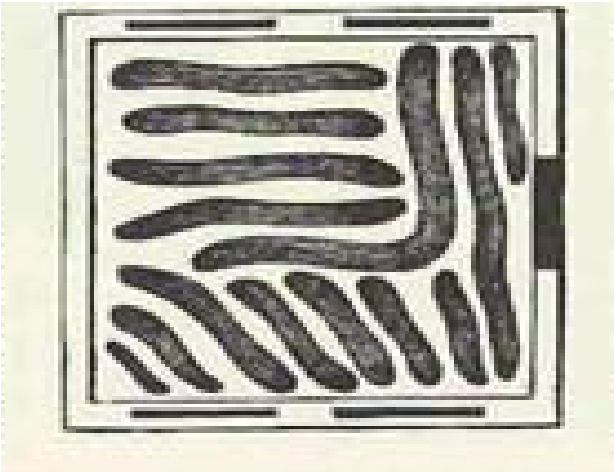
Gravitomagnetism

Ian answers the query from last month's article on rotating comb

May I suggest that after the vertically aligned comb had been constructed in the left hand diagram, that the hive was then rotated through 90 degrees, in an anti-clockwise direction, and that the remaining comb was built subsequent to this time. From the diagrams in Part 2, this seems a distinct possibility.

Ian Rumsey





In this article, Chad warns of the results of a lifestyle of greed.

Swarm Collection

I write this article as a lesson to all others who may find themselves as weak in the face of temptation as I did. I have had much time to reflect upon my misdoings and have reasoned that by coming clean, I can help prevent other souls from being lost down the same path that I took. Having been called out many times the previous summer to collect swarms I realised that there was a great deal of money to be had for offering my services as a swarm collector. I therefore advertised widely in the local area with my name and number; in the local shop, the pub and with the local police station. So it was, that the phone began ringing in late May with some regularity.

It was quite exciting at first, popping-off here and there to collect swarms. On one particular day I hived a swarm and brought it back to my home apiary only to find that some minutes later the swarm had re-emerged and re-formed their cluster on a nearby apple tree. That got me thinking. My thoughts are not always good ones. The following afternoon I was phoned by a rather distraught elderly couple in Ashton Keynes. Would I be able to please come and deal with a swarm that had appeared on their washing-line pole? I certainly could and, informing them that there would be a small (yet not crippling) collection fee, I was there within the hour. It was not a large swarm, two frames worth I'd say. I shook the bees into my box and then waited for the remaining stragglers to find their way through the entrance hole. The majority of the bees were in the box by the time I'd finished the two cups of tea and three slices of local-fete-winning fruit cake that I'd be given.

Having bid my farewell to the elderly couple. who expressed their gratitude with a bag of greengage plums, I made-off. I felt a little like Robin Hood going merrily on my way with the nuked swarm on the back seat of my car. That's when it all went wrong. Two miles down the road, at the entry to a rather well-to-do housing estate. I stopped the car. looked around to see if there was anyone about before opening the car door and tipping the nuked-swarm back out of the box on to the road. I then closed the door and headed home to wait by the phone.

Sure enough, after an hour the phone rang. It was no great surprise that the voice on the phone belonged to the owner of the house and garden closest to my release site. 'Oh really?' I said in reply to the panicked voice on the phone. 'A swarm arrived just before, did it? As big as a football you say?' (I knew perfectly well that the swarm was no bigger than the size of a baked bean tin.) 'Very well. I am a little busy,' I continued, looking at my cup of coffee, 'but I'll come just as soon as t can. Keep an eye on the swarm, stay indoors and what ever you do, don't go near it. Swarms can be very dangerous,' I said reassuringly. And then just before 1 hung up I mentioned, 'I do ask for a collection fee...' A warm feeling ran through me as the words. 'would pay anything to get rid of them,' were replied.

With regard to payment I always applied a sliding scale to my charges for swarm collection. An elderly couple who had fought two world wars for my freedom would not be charged as much as a business man who understood that he should pay for my petrol, time and (most expensively) my expertise. After all, I thought, isn't money made

round so that it can roll towards me?

My swarm collection service was stretched to its limits throughout the early summer months, which is why I decided to employ Fred. (I have of course changed names to protect the innocent.) He and I worked together in a capture and release partnership. At the height of the season we recaptured the same swarm thirteen times and were operating about twenty swarms throughout Wiltshire. I even began my own queen rearing program, selecting only those bees which showed a strong tendency to swarm. I can highly recommend Italian bees for this purpose; I had little luck in raising Carniolans with such a strong swarming urge.

Greed is a terrible thing and with time, Fred and I became rather blase about the whole procedure. The length of time we were prepared to wait for the summoning phone-call grew less and less. Soon we fell into the trap of pre-empting the phone call. I remember that in a few instances I even pre-empted the arrival of a swarm, knocking on a front door and telling some bemused-looking soul that I had come to collect a swarm (that they were completely unaware of) from their garden. There were also a few awkward moments when I was stood looking around a back garden feeling like a chump muttering, 'I had a feeling that there might be a bee swarm about,' and wondering whether Fred had really released the bees at all. It would be fair to say that I gained an almost mystical status in Wiltshire for being able to turn up just in the nick of time whenever a swarm appeared. I received a massive amount of publicity by releasing a swarm behind the marquee at the church fete. At 1.30pm the vicar was beside himself with worry, wondering whether to cancel the event which was scheduled to start at 2pm. I can vividly recall the photo of me that appeared in the parish magazine: 'Vicar-tory for the bee-keeper!' it said. Looking back I realise now that I had fallen in league with the devil and that there was no health in me. I was, on the other hand, making a great deal of not-so-hard-earned cash and that (as you know) can disguise a great host of other deleterious feelings. My fame and notoriety spread like wild fire or wild swarms, as I was keen to tell people. Certainly a statistician would be able to tell you that in 2004 there was somewhere in the region of a 4000% increase in the incidence of swarming in the Wiltshire area.

No doubt it was a disgruntled Warminster Branch beekeeper, jealous and suspicious of the number of swarms I was taking,) that blew the whistle on me and brought my enterprise crashing down around me.Not only was I filmed operating my capture and release technique but a phone call was made to the Inland Revenue which left me with the impossible job of explaining away the inexplicable trappings of my by then lavish cash-in-hand lifestyle. Of course I should have seen that one coming. I know of no other bee-keeper who turns up to take swarms in a brand new S-Class Mercedes (bought in ten and five pound notes.)

Fred and I are now into our third month of community service and spend our days picking chewing gum from the pavement in Chippenham. I realise now the error of my ways and have been made aware of the hurt I have caused to my friends and family.

Naturally, I was made to pay back the £20,456 that I had acquired through my 'enterprise', but it was a greater blow to be expelled from the Melksham and District Association.

Chad Cryer

FEEDING SUGAR SYRUP? ARE YOU POISONING YOUR BEES?

In the last issue of Apis UK we took a look at HMF in honey and it was noted that although an indicator of post harvest treatment of honey, and so therefore subject to legal limits of quantity in honey for sale, it wasn't in fact poisonous or harmful in any way to humans. It is however harmful to bees and yet many beekeepers, commercial ones included inadvertently feed poisonous sugar syrup to their bees in the form of invert sugar syrup. How is this? Well it all depends upon how you invert it.

When bees collect nectar, which is mainly the disaccharide, sucrose, they invert it, reshaping the molecule and forming the two simple sugars glucose and fructose. By doing this, it enables them to pack the resultant liquid more efficiently. Thus when beekeepers feed liquid sugar syrup, the bees (as in nature) have the task of inverting it. From experience among commercial beekeepers with thousands of hives however, it does seem that the feeding of invert sugar rather than normal sugar syrup, which more naturally replicates inverted nectar, gives the bees a huge boost. It's as though the bees think that it's spring again and off they go. Nucs respond especially well to the feeding of invert and if all other nutritional requirements are met, invert will give them a huge boost. Research shows that bees have a longer life, and build comb faster when fed invert than when fed normal sugar syrup. There are dangers however. Invert sugar syrup from a manufacturer is expensive and so many beekeepers invert the sugar themselves. There are two ways of doing this.

Acid Hydrolysis

One way is to add acid (almost any acid will) to the sugar syrup. This will split the molecule into the two component sugars and so invert it. The problems with this method are as follows:

(a) You have to take the liquid to high temperatures, (near to boiling), which is dangerous to the beekeeper and also dangerous when pumping the liquid.

(b) You need to stop the process somehow using a base such as soda ash. If you don't, the acid will continue to break down the sugar into other potentially harmful substances.

(c) Inversion via acid hydrolysis splits the molecule and one of the by products is HMF. This can build up to high levels and poison your bees. A study in Germany in 1975 found that the concentration of HMF in sugar syrups is indeed the factor that causes mortality in bees. Concentrations at levels below 3mg per 100g of syrup did not kill bees, but levels of 15mg per 100g of syrup, which is common in commercially available acid hydrolysed sugar syrup causes significantly increased bee mortality. (Mortality is due to gut ulceration).

Yeast (Invertase action)

In contrast to this, the other method of inverting sugar syrup using dried active yeast achieves the intended result, safely, more easily, in the same way as the bees do it and with no formation of HMF. The mix and temperatures are as follows:

Per thousand litres of sugar syrup:
250g of dried active bakers yeast.
Mix with a cup of the sugar syrup.
Add 1 litre of warm water (about 40C)
Mix well and leave for a few minutes until it starts rising.
Add this to the sugar syrup, which must be at 30C or above and stir in well. (Best have a constant stirrer).

Increase the temperature of the syrup to 65C ensuring that the liquid is between 45C and 55C for at least two hours. This allows the Invertase in the yeast time to work at its optimum working temperatures and by raising it to 65C you kill off the yeast. (Or you may end up with a vat of home brew, which of course may not be a bad thing).

The sugar is inverted at very little cost, is safe for bees (and beekeeper) and is ready to use.

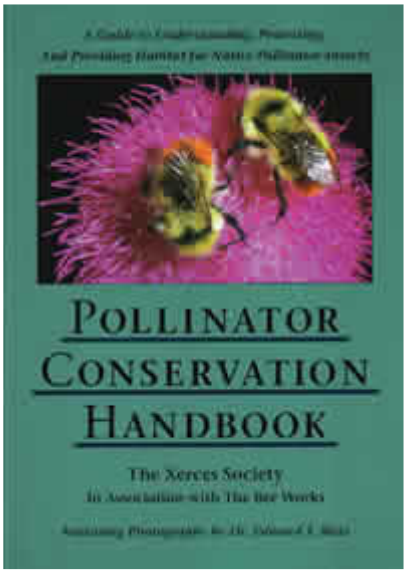
The fight against Varroa
A better and safer way of using oxalic acid

Many beekeepers have been using oxalic acid now for some time in the fight against varroa so it is interesting to note that the Swiss company Andermatt Biocontrol; have developed an oxalic acid-sucrose trickling product for varroa control (OXUVAR). See http://files.biovet.ch/documents/oxuvar_en.pdf It is now licensed for use in Germany and it is expected to be licensed in Switzerland by the end of the year. Oxalic acid is simple in application and has a low risk of residues and its use is wide spread in Europe. OXUVAR has been developed to simplify the trickling or drip method of applying oxalic acid and meets the requirements for veterinary products see: http://www.apis.admin.ch/en/krankheiten/docs/saeuren/acide_oxaliqueBeeWorld.pdf.

Book and Film Reviews Back to top

POLLINATOR BEES A look at a book on the subject.

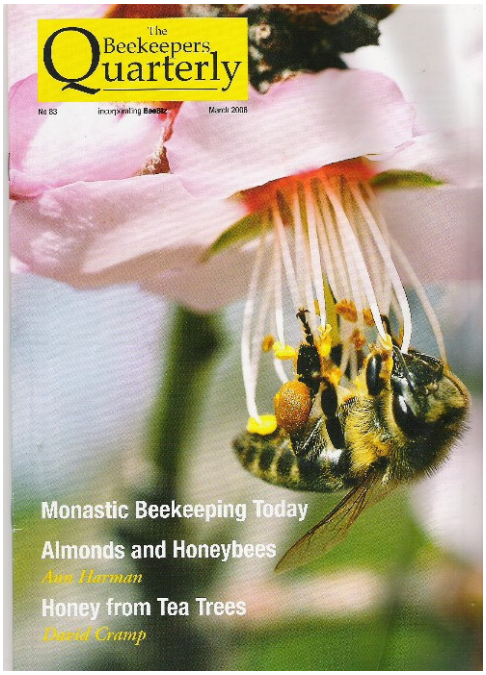
Following on from the research news item on the role of pollinator bees, we bring you an excellent idea for a present for someone interested in the subject, or just for yourself. The book is available from that admirable charity, **Bees for Development.**



The Xerces Society and The Bee Works 2003 145 pages A5 soft cover. Most flowering plants are pollinated by insects. If pollinator populations are depleted, then many of these plants will produce few seeds, or no seeds. The consequence is that plant populations decline and maybe disappear, and the pollinators decline and disappear too. This excellent handbook describes how you can help to protect and re-establish populations of pollinators: included here are solitary and social bees, flies and beetles. Chapters cover threats to pollinators, actions to help pollinators, planning habitats, providing forage, nesting and over-wintering sites. Annexes include more ideas for educators and parents, resources and plant lists. Although written primarily for North America, this book will be helpful for farmers, gardeners and environmentalists everywhere. With beautiful colour pictures throughout, this is an extremely useful text.

The book costs just £19-70 from Bees for Development and can be seen and purchased from their web site www.beesfordevelopment.org

Magazine Review



The Beekeepers Quarterly. Spring 2006 No 83.
Our sister magazine, The Beekeepers Quarterly (incorporating Bee Biz) is of course now out and if you haven't yet seen a copy, here are some of the high lights

Under the usual regular items (Letters and Newsround) are some intriguing happenings, including details on the couple from Norfolk (UK) who sold 20 tonnes of foreign honey as Norfolk produce! The honey apparently came from Argentina and China. A research item claims that bees can recognise human faces. Work has shown that bees may transmit viruses to their offspring. Apiguard is launched in the USA. Sales of honey in the UK have soared, but honey crops in Argentina are likely to be low.

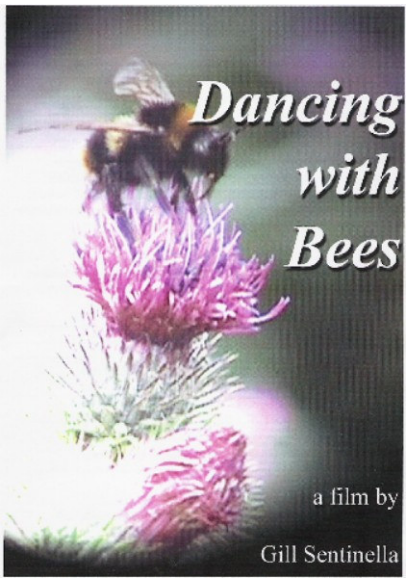
A highlight of this issue is a splendid article on Monastic Beekeeping. This beautifully illustrated piece discusses beekeeping in monasteries from Greece (the remote Mount Athos), England (Worth Abbey, Quarr Abbey, Farnborough Abbey, Buckfast Abbey, Mount Saint Bernard, Douai Abbey), Scotland (Pluscardin Abbey), Hungary (Alsovarosi Church and Monastery), New Mexico (Monastery of Christ in the Desert) and USA (Mount Assumption Abbey, St Benedict's Abbey).

There is a report from last year's Apimondia on bees as pollinators. Another report on pollination is from the US and discusses almond trees and honey bees, while in New Zealand, tea trees are apparently a good source of honey.

A new item is called 'Soapbox' and has more discussions on queens, drones and varroa. Several letters also refer to this topic.

FILM REVIEW

DANCING WITH BEES
a film by Gill Sentinella



It isn't often that a new beekeeping film comes out, but here is a new one which is ideal for those wishing to explain what bees are all about to all sections of the general public who generally wouldn't be able to tell a bee from a wasp and who think that beekeepers make honey from bumble bees. (Two of my friends did think that). I tested Dancing with Bees on my 11 and 4 year old daughters and it worked brilliantly for them. They were glued to it and it was short enough for them to want more which is always better than losing their attention. At one point one of them shouted out, "Hey dad, all your bees swarm like that." Years ago I could have clipped her round the ear! I reckon that this delightful 'nutshell of bees and beekeeping' set to Mozart no less, is the perfect medium for use as described in the blurb ***'…. entertaining and educational and can be used for all venues; schools, colleges, clubs and societies, museums or as an introduction or backdrop for speakers everywhere.'*** It cleverly covers just about everything you need to know about the subject on a general level in a short enough time not to bore people and it does so in an extremely interesting manner, managing to explain the bees' natural history, the colony social structure, the importance of pollination, the production of honey and of course the sting. I know that beekeepers will thoroughly enjoy the film and non beekeepers will be captivated and educated. It is a great shame that in a world where bees are so important to everyone on the planet that there should be such general and increasing lack of knowledge about them amongst the general public. This short film may be a way of correcting that state of affairs and I recommend that firstly you buy it and secondly you show it to all your non beekeeping friends. If you are ever asked to speak at a meeting or school or scout/guide group etc, then take it along. Libraries too would do well to obtain copies for their video sections and to publicise it with the poster.

The film which comes as a DVD or VHS is inexpensive and costs **DVD £7.95, VHS £6.95.** You can also obtain a colourful poster with scenes from the film for £6.95 or the DVD and poster together for £13.95.To buy a copy send a cheque or postal order

(made payable to Gill Sentinella) to: Wardengate, 218 Old Bedford Road, Luton, Beds, LU2 7HP and for more information on the film, email Gill at: dancingwithbees@hotmail.co.uk.

RECIPE OF THE MONTH Back to top

Almond Cakes (Not just ordinary ones though).

Andalucians have long been known for their prowess in making some of the most delicate cakes and pastries you can find. Many of these delicacies were first prepared by the Muslim conquerors of Spain in the AD 700s and since have been taken on by those most Christian of institutions, the convents.
The cake and pastries made in Spanish convents are famous for the result of careful preparation and traditional methods. One particular convent in the gaditano town of Medina Sidonia (itself an Arab name) is my favourite, producing pure magic with eggs, almonds and honey. Here is an excellent recipe that will give you a true taste of this excellent tradition.

Servings: Makes 6-8 cakes
Prep Time: 30 min.
Cook Time: 15 min.

You will need:

4 eggs
9 oz blanched peeled almonds
4 oz sugar
Zest of 1 lemon
Cinnamon
1/4 cup flaked almonds
Butter and flour to grease the pans
Preparation:
Grind the almonds in an electric grinder with a little sugar to prevent them from going oily.

Beat the eggs with the rest of the sugar until light and fluffy. (If done by hand, first beat the yolks with the sugar, add the almonds, etc. and finally the egg whites beaten stiff).
Add the cinnamon and lemon zest then gently fold in the ground almonds. Grease and dust with flour 6-8 individual tart pans; fill them with the mixture and sprinkle with almonds flakes. Bake at 350 degrees F for 15 minutes.
Remove from the pans while hot and leave to cool.

To get these really light and delicate is not easy and you may well mess it up first time, but keep trying because they are worth it. Drink with a sip of anise or a decent agua dente.

(This recipe came from the Spain GourmeTour magazine).

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THE COLOUR OF HONEY

The colour of honey depends on a whole variety of factors and is something that cannot be controlled by the beekeeper, but as colour is an important characteristic used by producers, packers and end users alike, its measurement is important in quality control processes and colour designation is an important factor in honey grading.75% of industrial users include colour specifications in their designations.

Colour grading has been used by the honey industry in the UK and abroad for many years. In natural conditions, there is a continuous range of colours related to floral source and mineral content. The colour has a connection with taste as well as lighter coloured honeys are generally milder than dark honeys. (There are exceptions though to this. E.g. basswood is light in colour but strong tasting).

Possibly the simplest devices used for grading colour are simple coloured glass plates used in local competitions and shows. These devices usually divide the grades into two or three different categories of light, dark and very dark honeys and although sufficient for their purposes in show grading, are too simple for industrial use.

Originally a device known as a Pfund grader was used to grade colour in industry.

The amber glass wedge of a Pfund colour grader.

The scale for this is called the "Pfund" Scale and is measured in millimetres. The scale is actually a metric ruler measuring the point along a calibrated amber glass wedge where the sample (placed in a glass wedge shaped trough) matches the amber wedge. The scale starts at 0mm (colourless) and finishes at 140mm (black). Some common terms describing the colour of honey actually have specific ranges on the Pfund Scale. These also vary slightly from country to country with the USA, Canada and Australia all having slight variations. The US scale is as follows:

0-8mm	Water White
Up to 17 mm	Extra White
Up to 34 mm	White
Up to 50 mm	Extra Light Amber
Up to 85 mm	Light Amber

Up to 114 mm	Amber
Over 114 mm	Dark

This instrument and method of measuring the colour of honey is inexpensive and convenient but there is quite some variation between instruments.
Spectrophotometry is another method used by industry and has the advantage of not suffering variation between instruments, but is a very much more expensive instrument and more complex to use. It measures absorbance at 560nm and thus enables a colour classification to be established as follows:

Pfund scale	Classification	Mid range absorbance at 560nm
0-8mm	Water White	0.0945
Up to 17 mm	Extra White	0.189
Up to 34 mm	White	0.378
Up to 50 mm	Extra Light Amber	0.595
Up to 85 mm	Light Amber	1.389
Up to 114 mm	Amber	3.008
Over 114 mm	Dark	>3.1

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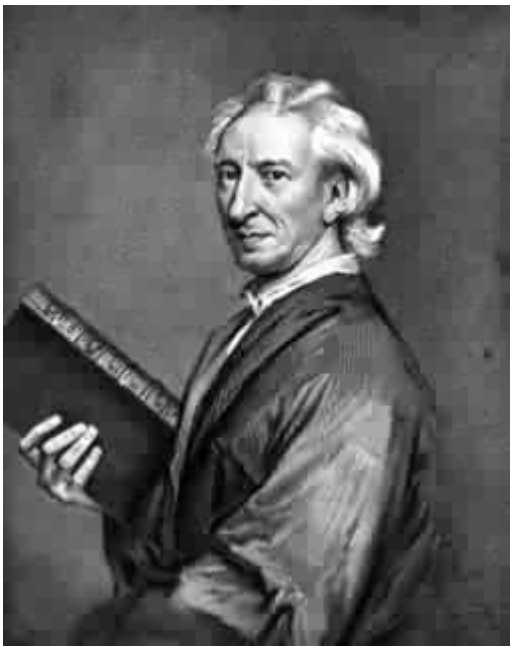
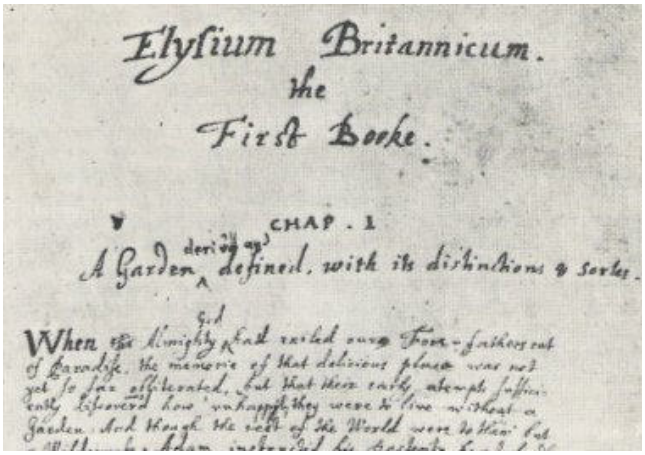
John Evelyn 1620 - 1706



This month we look back to the 1600s and John Evelyn who, like his contemporary Samuel Pepys, is perhaps better known to many as a

diarist. But we are interested in John Evelyn the keen observer of beekeeping and bees as described in his Elysium Britannicum. The Book begins with what could be termed one of the great openers of English literature.


Elysium Britannicum.
the
First Booke.

CHAP. 1
A Garden defined, with its distinctions & sorts.

When the Almighty God had exiled our Fore-fathers out of Paradise, the memorie of that delicious place was not yet so far obliterated, but that their early attempts sufficiently discovered how unhappily they were to live without a Garden. And though the rest of the World were to their Cost

'When Almighty God had exiled our fore-fathers out of paradise, the memorie of that delicious place was not yet so far obliterated, but that their early attempts sufficiently discovered how unhappily they were to live without a garden'.

Elysium Britannicum was intended to be an encyclopaedic work on gardens and gardening and an encouragement for land owners to plant and preserve trees for the benefit of the whole nation. The project was so huge that he was unable to finish it, but his chapter on bees and beekeeping was completed. His plea to land owners to instruct their gardeners in the preservation of this 'celebrated creature' says much for Evelyn's appreciation of bees.

If we contemplate, the Bee is a rare Architect, forming her hexangular cell for every foot an Angle. They have a City, King, Empire, Society; they feed not on flesh, fat or blood, but on the sweetest flowers, yet so feed on them not to deface either their beauty, rifle or discompose their chaste folds. Idleness they abhor and when any difference arises Musique reconciles them again and therefore they are the Muses birds, prophetic and auspicious to poets and eloquent men. Plato, Pindar, Virgil and St. Ambrose and divers other persons are instances of this assertion…….

POEM OF THE MONTH Back to top

Midwinter Hive

On that sparkling sheet of white,
I spy a lesser-white --a hive,
The wind howls; the cold numbs

But inside, countless creatures cling
To one another; waiting,
Waiting for the first signs of spring,
That once more they might reap,
For man and bee, with buzzing wing.

Alan Ratcliffe

LETTERS Back to top

Hi,
I was asked in the April Newsletter to keep in touch and tell y'all what is going on in the photo. (See last month's issue No.41).
Going only by appearance, a pallet of hives have been upset and the hive tie down straps failed to hold the hive that the gentleman is working on to stay on the pallet to his left which is still upturned. I would presume that this pallet of hives were either being moved or being set, unless a four legged creature did the up turning, it was just another beekeeping nightmare. Beyond this beekeepers wildest dreams he now has the gentle job of cleaning up the mess and setting things right at night.
Keith Malone, Chugiak, Alaska USA, http://www.cer.org/,
c(((([, Apiarian, http://takeoff.to/alaskahoney/,
http://groups.yahoo.com/group/akbeekeepers/ ,
http://groups.yahoo.com/group/Norlandbeekeepers/ ,
http://groups.yahoo.com/group/ApiarianBreedersGuild/
(You are right of course Keith. Ed)

The Editor,
(We)Would like to offer for your catalogue the reference to the Internet a site about beekeeping in Russia. Here are be about 400 beekeepers daily. Huge set of interesting clauses and news about beekeeping in Russia and all world. I think to your visitors it will be interesting to get acquainted with the beekeepers from Russia - www.beeland.ru

www.beeland.ru - site about the Russian beekeepers, eyes of the
Russian beekeepers

DATES FOR YOUR DIARY Back to top

8-10 June **SOUTH OF ENGLAND SHOW** at Ardingly,West Sussex. Bees and Honey Show open to all beekeepers. Schedules available now from Mrs Audrey Gill, 143 Smallfield Road, Horley RH6 9LR

2 to 8 July **THE ROYAL SHOW** BBKA is planning a comprehensive display of bees and beekeeping at the Royal Show, Stoneleigh on 2-5 July 2006. This will be located in the new Countryside Smallholders area. To volunteer as steward send your name, address, telephone number, (e-mail) to Clive Joyce National Beekeeping Centre, Stoneleigh Park, Warwickshire, CV8 2LG.

Friday-Saturday 21st-23rd July **DBKA Summer Conference** at Exeter University. For more information Download Booking Form [159KB PDF]

QUOTE OF THE MONTH Back to top

Which historical figure, when asked by the Emperor Augustus how he managed to live to such a ripe old age, answered:

"Intus mulso fores oleo".

Which of course means: ***'honeyed wine inside, olive oil outside'*** – which are my sentiments exactly. (Ed).