Beetalk

General info and news about bees
June 2017

Hello and welcome.

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

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

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

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

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

Hope you enjoy.

Editor

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

Please e-mail them to the editor

at

birt_192@hotmail.co.uk

PLEASE SUPPORT THE FOLLOWING.

NORTHERN BEE BOOKS

OVER THE PAST TWENTY YEARS OR SO WE BEEKEEPERS HAVE HAD TREMENDOUS SUPPORT FROM NORTHERN BEE BOOKS. WE WOULD LIKE TO THANK THEM BY PUBLICISING THEIR WEBSITE WWW.BEEDATA.COM

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UK Honey Labelling Regulations

Below is our simple advice on honey labelling. For more detailed information - go to the website of the Food Standards Agency. www.food.gov.uk

1. The Word "HONEY" is required.

2. The weight must be on the label - we will ensure it is the legal size and format.

3. You can specify the area where the honey is produced. For example, Lincolnshire, Forest of Dean, Scottish Borders.

4. You can specify the type of honey. For example, Heather, Borage. The honey must be at least 75% of that particular type.

5. If you are selling the honey, you must have your name and address on the label. It does not need to be complete but you should be able to be found from the information.

6. If you are selling the honey through a third party, you must have a lot number.

7. New for 2003 You must have a best before date on the jar. We suggest 2-5 years from now.

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

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

Dysentery.

Michael Birt

Dysentery is the manifestation of the over-wintering bees defecating in the hives on a gross scale. But it is the end of the scale. Defecation in the hive can occur without causing dysentery; the bees will often clear up the mess and remove the evidence. We all know that dysentery is associated with the inappropriate feeding of the bees, but it is also known that Nosema infection in a colony can exacerbate the conditions resulting in dysentery.

When a honeybee becomes infected with Nosema the organism multiplies in the gut lining of the bee at a remarkable rate and within days millions of the Nosema spores can be found in the gut and the lining cells in which the Nosema multiplies is heavily infected.

Nosema sp. infections cause a reduction in the life expectancy of the worker bee of 30% or more and this results in heavy over-wintering losses and weak colonies emerging in the spring. Surviving colonies are weakened. The worker bees which do survive have a reduced (ie. protracted) rate of behavioural development so that the normal transitions from comb cleaning to larval feeding and then wax production etc. are delayed. This slowing in behavioral development presumably reflects the reduced availability of the necessary products of digestion from the bees' guts, particularly the products of protein digestion.

Nosema has long been known to be associated with Black Queen Cell virus and Kashmiri virus infections. More recently it has become suspected that the infection of the worker bees' gut by Nosema predisposes to the gut lining becoming a portal of entry for other viruses. Therefore it is not surprising that Nosema infection is associated with colonies dying during the winter The queen, being an over-wintering bee, is also usually infected and the infection causes her to lay fewer eggs and the eggs which she does lay to have reduced viability. She will also be suffering from reduced availability of royal jelly from the diseased worker bees.

What with one thing and another it is not surprising that Nosema is associated with poor colony build-up in the Spring in addition to winter losses. The effect of the Nosema infection on the digestive and absorptive functions of the bee's gut predisposes to infected bees having to defaecate in the hive when they are confined there during the winter months. Whether dysentery occurs is a matter of degree and the result of multiple factors. However, one thing is certain, infected worker bees shed Nosema spores when they defaecate and uninfected workers become infected when they clear up the mess in the hive. That is how Nosema cross-infection occurs!

Recent DNA studies seem to indicate that N o s e m a c e r a n a e , although now present in Northern European countries including the UK, is a more important pathogen in the Mediterranean countries. Nosema apis , remains the dominant form in the Northern countries.

Nosema is a very nasty and complicated bee disease but its presence in a colony is identifiable and beekeepers must make sure that they carefully look for it in their bees and treat it effectively when they find it.

For people buying bees, and this applies particularly to beginners and the relatively inexperienced, please make sure the bees you buy are certificated by the vendor as being healthy and have been examined for Varroa , brood diseases and adult bee diseases which will, of course, include Nosema . Bees are now very expensive.

Certification is no more than is now recommended by FERA and the National Bee Unit and this policy is supported by the BBKA. If people buying bees do not do this, I am afraid that they deserve what they get (or rather, lose).

ELEPHANTS' FEAR OF ANGRY BEES COULD HELP PROTECT THEM

At a time when encroaching human development in former wildlife areas has compressed African elephants into ever smaller home ranges and increased levels of human-elephant conflict, a study in 'Current Biology', suggests that strategically placed beehives might offer a low-tech elephant deterrent and conservation measure.

The researchers found that a significant majority of African elephants fled immediately after hearing the sound of bees, providing "strong support" for the idea that bees, and perhaps even their buzz alone, might keep elephants at bay. By contrast, the elephants ignored a control recording of natural white-noise, the authors reported.

"We weren't surprised that they responded to the threatening sound of disturbed bees, as elephants are intelligent animals that are intimately aware of their surroundings, but we were surprised at how quickly they responded to the sounds by running away," said Lucy King of Oxford University. "Almost half of our study herds started to move away within ten seconds of the bee playback."

Earlier studies had suggested that elephants prefer to steer clear of bees. For instance, one report showed that elephant damage to acacia trees hosting occupied or empty beehives was significantly less than in trees without hives, the researchers said. In Zimbabwe, scientists have also seen elephants forging new trails in an effort to avoid beehives.

In the new study, the researchers tested the response of several well-known elephant families in Kenya to the digitally recorded buzz of disturbed African bees. Sixteen of the 17 families tested left their resting places under trees within 80 seconds of hearing the bee sound, the researchers reported, and half responded within just 10 seconds. Among elephants hearing the control sound, none had moved after ten seconds and only four families had moved after 80 seconds. By the end of the 4min sound playback of bee buzz, only one elephant family had failed to move, whereas eight families hearing the control sound had not moved.

This behavioural discovery suggests that bees might very well be a valuable addition to the toolbox of elephant deterrents used by farmers and conservation managers across Kenya, King said. She added that such innovative approaches are sorely needed "to avoid extreme solutions such as shooting problem animals." She cautioned that the use of beehives to shoo elephants away might prove to have limited application and that more research is needed if we are to understand its effectiveness. "But if we could use bees to reduce elephant crop raiding and tree destruction while at the same time enhancing local income through the sale of honey, this could be a significant and valuable step towards sustainable human-elephant coexistence."

BEEKEEPERS ARE THE NEW MICE BEEKEEPERS ARE THE NEW MICE BEEKEEPERS ARE THE NEW MICE.

Dr. Brasseur, Journal of Experimental Medicine

Beekeepers are the new, improved mouse model for immune responses to allergens. It's an immunologist's dream.

By the very nature of their activities, unprotected beekeepers are voluntarily and repeatedly injected with high doses of bee antigen—an average of 13 antigen-loaded stings in the first week of the honey-harvesting season alone, according to the study. And in just these seven days, the beekeepers developed an immune tolerance that was noticeable in both skin reactions and T-cell responses. Beekeepers demonstrate immune tolerance, and the researchers suggest that it can be traced to a cytokine switch.

Having recognised the invader, different types of T-cell have different jobs to do. Some send chemical instructions (cytokines) to the rest of the immune system. Your body can then produce the most effective weapons against the invaders, which may be bacteria, viruses or parasites. Other types of T-cells recognise and kill virus-infected cells directly. T-cells that had made mostly IFN- started making more interleukin-10 (IL-10), which tempers immune reactions. IL-10–producing cells curbed the In-vitro proliferation of other Tcells in response to bee antigen.

The cytokine switch, the authors found, was initiated through the histamine pathway. As with many allergens, bee venom induces mast cells to unload histamine. In-vitro experiments with the beekeepers' T-cells revealed histamine induced IL-10 production and T-cell lethargy, both of which required the H2 histamine receptor.

The beekeepers' tolerance was lost within two months of the season's end, unveiling a relatively short lifespan of T-cell suppression. The cycle repeated at the onset of the next season, so beekeepers have little to worry about. But allergy sufferers, who may be defective in this IL-10 response, might be less enthused, because the findings suggest that successful therapies involving allergen-specific immuno-therapy probably require considerable perseverance.

This begs the question: 'Should we all be beekeepers for our allergens?' Probably not, until we figure out if it's an IL-10 problem that causes the allergies. After all, what good would living with, say, 30 cats do if in the end, we'll still be IL-10 deficient with watery eyes and a reputation as a cat hoarder? None. But a sustained release of IL-10 designed with a long half-life in the systemic circulation perhaps may have some value.

NECTAR

The sweet aqueous solution secreted by floral nectaries has the primary function of attracting and rewarding potential pollinators. While the mechanism of nectar secretion is not fully understood, it is well known that secretion is dependent upon the metabolic activity of the nectary tissue and several possible metabolic pathways have been described.

Nectar is secreted from the cells into the intercellular spaces from which it diffuses through the epidermis or stomata of the nectary. The amount of nectar and sugar content that is secreted is dependent upon the plant itself and the environment. With some species, there is a relationship between the size of the nectary and quantity of nectar secreted. Other plant factors that may affect nectar quantity and quality such as the sex of the flower; position of the flower on the plant; age of the flower; variety of flower.

Nectar secretion often ceases after pollination. When pollination fails to occur, then the length of the secretary period is usually extended. With many species, uncollected nectar may be reabsorbed by the nectary tissue.

The concentration of the nectar as it is secreted by the nectary is highly dependent on the anatomy of the vascular system supplying the nectary and on the sugar concentration in the phloem (food conducting vessels) and/or xylem (water conducting vessels) of the nectary vascular supply. Highly concentrated nectar which is characteristic of several plant species, essentially originates from phloem tissue whereas plants that produce high volumes of dilute nectar have limited phloem tissue and abundant xylem. The quality of the nectar secreted is essentially a function of the carbohydrate (sugar) supply to the nectary and indirectly related to photosynthesis (process by which green plants produce their own food). Most of the sugar of nectar probably comes from leaves fairly close to the flower. In herbaceous plants, the nectar sugar is likely to be of recent origin, whereas in trees and shrubs, it may also be derived from stored carbohydrates. It is highly probable that any factor which alters the rate of buildup or breakdown of the carbohydrate supply will influence nectar secretion. Sufficient sunlight is of primary importance in supporting a high level of photosynthesis. Flowering is one of the later events in the life history of an annual plant and any factor to which the plant has been exposed prior to this time will, to some degree, influence flowering and nectar production.

In general, conditions which impose no appreciable limitations on growth and which promote a reasonable balance between vegetative and reproductive development seem to support good nectar production.

Throughout the growing season, water is an important factor in the regulation of plant growth. Either a shortage or an overabundance of water may stunt plant growth and lead to poor nectar yields. During the secretary period, a lack of water may reduce the amount of sugar synthesized.

External factors influencing secretion are those of weather and soil. Weather is a complex of interrelated factors that are often difficult to separate into individual components. Temperature has received more attention than other factors and there is a difference of opinion regarding its importance. Records of daytime temperatures may reflect conditions of sunlight which in themselves cause wide variation in the nectar flow. Temperature affects many plant processes which are proceeding at the same time. A certain threshold temperature is necessary if secretion is to occur. Within normal limits, temperature variation probably has little influence on the amount of sugar which the plant synthesizes, but it has a very marked affect on the rate at which the sugar is consumed in growth, respiration, and other processes. Flower development is accelerated at high temperatures and the duration of secretary activity is probably shortened. Excessively high temperatures in combination with meager rainfall can lower nectar production by causing a moisture stress in the plant.

Atmospheric humidity does not affect nectar secretion directly, but has a pronounced inverse effect on nectar sugar concentration. As nectar is secreted, it undergoes a regulation of concentration until its vapour pressure comes to equilibrium with that of the atmosphere. Unless the humidity of the atmosphere is very high, the change will be a loss of water molecules to the air and an increase in nectar sugar concentration. Rates of increase in nectar sugar concentration can be extremely rapid in flowers in which the nectar is exposed. Evaporation is hastened by high temperature and rapid air movement across the nectaries.

Glimpse's from the Past

SLEEP DEPRIVED HONEYBEES ARE SLOPPY DANCERS

Just like humans, sleepy bees suffer at work. For us, a snooze-deprived worker can't concentrate or perform tasks efficiently, but for honeybees a lack of sleep leads to mistakes in a waggling dance they perform. Bees do in fact sleep, contrary to popular belief, and exhibit very similar characteristics to humans when napping. They relax their muscles, their body temperature drops, and they won't move around or react to stimuli very readily. Plus, as a study from the University of Austin reveals, taking forty winks is very important for bees to get enough energy to perform their daily routines.

Researchers kept some bees up throughout the night, while a control group had a snooze. In the morning, the sleep deprived honey-bees weren't as able to communicate as well with their fellow insects. Bees use interpretive dance to point out nectar-filled flowers to other bees, waggling their fuzzy bodies in the direction of the food source. But the tired bees had less precise jigs and made more mistakes than their well rested compatriots, which would lead to fewer followers making it to food in the real world.

So how does a scientist go about keeping hundreds of honeybees awake? Late night horror movies? Caffeine? Nope, instead the researchers attach a little metal backpack to each honeybee, and then a wall of magnets passes across the bees. This contraption, called the "Insomniator" jostles the insects awake, at different points throughout the night. Not too pleasant an experience, we imagine. This is, perhaps unsurprisingly, the first ever study of sleep deprivation in bees.

The research is reported in the journal 'Proceedings of the National Academy of Sciences'.

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TEST FOR HYGIENIC BEHAVIOUR IN HONEYBEES

There are several methods for testing hygienic behaviour. They are all based on the removal of sealed brood which has been killed behind the capping. The freeze kill is the most accurate and preferred for scientific work. Liquid Nitrogen can be used to freeze kill the brood in a few minutes. Alternatively, a piece of comb can be cut out of the comb and frozen in a freezer. The pin-prick method is less accurate but more convenient. It's the easiest method to start checking the hygienic behaviour of bees. Capping's of newly sealed brood cells are punctured with a fine pin to kill the larva underneath. After 24 hours the number of cells uncapped and cleaned out are counted and recorded. After several replications under different environmental conditions, colonies which have cleaned at least 90% of the cells within 24 hours are considered hygienic. This form of hygienic behaviour has been shown to be a significant factor in resistance to Varroa as well as AFB and especially Chalkbrood.

1) Mark a cell directly above three groups of seven newly sealed cells. Use quick drying paint or marker ink. Also mark the top bar.
2) Kill all twenty-one larvae by pricking them with a pin through the cappings. Use the same hole to prick the larva several times at different angles.
3) Twenty four hours later count how many cells are completely uncapped and cleaned out.

Colonies which have cleaned 19 cells are considered hygienic.

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BEE KIND TO THE BEES

The Rural Canadian, April 1881

Considering that during the honey season, when we have most occasion to handle bees, their average life is not over three months, there is but little chance to cultivate friendship with them. Besides, the first smell of you they decide whether to treat you as a friend or a foe. No kind treatment that you can give them will ever change their dislike of you into love. Be gentle with them always, but gentleness will not conquer their aversion if they have taken a "sconner" at you. It is people who are bee-loved who should make a life-work of apiculture. The most that others can do is to let the little insects know from the start that they have their master.

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DRONES AND ELECTRICITY

F Reiner, Gleanings in Bee Culture 1892

Experiments made years ago in Germany have shown that drones cannot withstand as strong a current of electricity as workers. Would it not be simpler and cheaper, by means of an electrical battery constructed in such a manner that the strength of the current could be changed ad libitum, to kill all drones of a colony instantly, than to use drone traps for the purpose?

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Queen Excluders, Supers and Supering.

The modern parallel-wire queen excluder has sturdy spacer straps, is framed and has a bee space on one side only. If you use a bottom bee space hive, like the National or WBC, the excluder bee space must be underneath and if you use a top bee space hive, like the Smith or Langstroth the excluder bee space must be on top. It is more expensive to buy than the traditional „sheet" type but with reasonable care it will last a lifetime. When considering which type of excluder to use, the restriction of hive ventilation must be considered. When nectar is first stored in the supers, it has a high moisture content, which must be reduced during the process of converting it into honey. This process becomes more difficult if the excluder forms a partial barrier to the free flow of air. The slotted zinc or slotted plastic excluder has many drawbacks. Beekeepers often use it by laying it directly on top of the frames of the brood chamber, where it has to be peeled off during inspections, with the constant risk of distortion. This is not quite so bad if using a bottom bee space hive, where the frame tops are flush with the top edge of the brood chamber, but with a top bee space hive the excluder tends to sag causing brace comb to be constructed both above and below it. This can be avoided to some extent by framing the excluder, but a frame consisting of four edges still allows sagging. At least two additional cross pieces are required to reduce this. If the excluder is merely lying on top of the frames it forms a barrier, both to the bees and the circulation of air, because bees and air can only pass through the slots which lie between the frame tops. The slots which cover the top bars might as well not be there. In addition, only the slots which have their short dimension fully clear of frames will allow worker bees to pass through. To reduce the effects of this the excluder should be placed with the slots at right angles to the frames, if the brood chamber dimensions allows this flexibility, i.e. some brood chambers are not square. Sheet excluders can be purchased „short slot" or „long slot". The long slot marginally increases access and ventilation but it does so at the expense of reliability in excluding queens and drones. Overcrowding of bees is recognised to be a barrier to ventilation and to the distribution of queen substance, thus leading to the onset of swarming. Not every beekeeper can recognise crowding in a colony. If bees are occupying all the space available to them, then they are overcrowded even although they seem to have enough room to move about. They do not need to be thick on the comb in the brood chamber or supers to be overcrowded. Since temperature, the need for space to „hang nectar out to dry" and other considerations determine the number of uncrowded bees on a comb face it is not feasible to use the number of bees per unit area as a measure of crowding. Severe overcrowding is obvious but the uncrowded colony can only be distinguished by the presence within it of some unoccupied comb space. Bees will occupy more comb space in hot weather than in cool weather so it is better to give them more room than seems necessary if they are examined on a cool day. When a single brood chamber is crammed wall to wall with bees, it is overcrowded. It requires part of another brood chamber or, at the very least, a super to be added. The number one purpose of a super is for accommodating bees. Supers are needed whether or not there is any surplus honey. The bees are programmed to appreciate if extra space is available should it be required. If that extra space is not available the seeds of swarming will be sown. Honey supers can consist of boxes having the same sized frames as those in the brood chamber or, more usually, shallower frames. In the use of National or Smith hives, these shallow supers are capable of holding 11-13kg of honey and are much easier to lift than deep supers. I would recommend the use of Hoffman self spacing frames in the brood chamber, but these frames in a super are a waste of money, the spacing projections on the sides of the frames are a hindrance when uncapping and they do not easily allow a wider spacing to be employed. I would also recommend that brood chamber frames are of the DN5 type consisting of a 26mm wide top bar which reduces the incidence of brace comb being built between the frames. I use the excellent SN1 shallow frames, which are made of 22.5mm wide wood, in my supers. The frames, when newly fitted with wired wax foundation, are set apart using narrow plastic spacers 36.5mm wide. A National super holds eleven of these frames. If frames with foundation are spaced more than 41mm apart, there is a likelihood that the bees will draw combs between some of the sheets and make a hopeless mess. When correctly spaced, the bees will draw the foundation into perfect combs which will, hopefully, be filled with honey and capped. These frames are then extracted, given back to the bees to clean up, and stored in their supers for future use. In subsequent years the plastic spacers can be removed and the frames put on to „wide spacing" using nine-slot castellated spacers. Castellated spacers should never be used in the brood chamber as they prevent frames being slid along the hive runners. Full supers containing nine combs will contain more honey than those containing eleven because there are only ten passage ways between the combs instead of twelve. The combs will be fatter, heavier and easier to uncap. If you have 100 supers to extract you will have only to handle 900 frames instead of 1100, which is a saving in cost and time for beekeepers with a large number of hives. The first super should be added, above a queen excluder, when the bees are starting to occupy the inside face of the outside combs in the brood chamber. If a wire excluder is in use and the first super consists of drawn comb, I have not experienced any difficulty

in getting bees to enter the super. When the bees (not necessarily honey) are occupying two thirds of the first super, a second should be given. This second super can be of foundation. If it is, it should be placed below the first where the bees are forced to pass into it to reach the super in which they are already working. Also, the direct heat from the brood chamber will assist in getting the foundation drawn. One of the aims of supering is to relieve congestion in the brood nest. Bottom supering helps to do that because bees will occupy the new super faster than they might if it had been placed on top. Remember that bees only draw foundation when there is a honey flow. If it is given at other times they will tend to chew and make holes in it. The foundation must be fresh from a sealed packet. If it has been on a colony the previous year and stored undrawn, try heating it gently with a hair-drier to remove „blooming" and raise its aroma. Bees tend to seal honey from the top downwards. This, together with bottom supering means that the sealed honey will be found in the top super where it can be inspected and removed more easily. It should be remembered that a super full of sealed honey has less room for bees than an empty one, because the inter-comb space has been reduced. If such supers are at the top of the pile, the state of crowding may not be apparent until these supers are taken off as there may only be guard bees in them. If there are a lot of bees in a full and sealed super, the probable reason is that they are overcrowded. In light of the preceding discussions, plenty of super room should be available in late spring and early summer to reduce the pressure on swarming. Towards the end of the honey season surplus super room is less desirable and should be reduced in order to try to encourage the bees to concentrate, ripen and seal the honey which they have collected. Partially completed frames or supers can be given to stronger hives to complete. If the beekeeper is likely to be on holiday or at work for an extended period in late spring to early summer, two shallow supers can be given at the same time. If they are given as top supers, a sheet of polythene which has a 30mm space cut all round can be placed between the supers. This will conserve heat and the bees will go around the edges of the polythene if they need to enter the second super. The polythene should be removed at a convenient later date.

Beeswax Hand Cream.

1 oz Beeswax 5 fl oz
Almond Oil 1 oz
Coconut Oil 30 ml
Rosewater ¼ tsp Borax

Method.
Heat together the Beeswax and Oils in a water bath until melted; Heat the Rosewater, add the Borax and stir until completely dissolved; When both mixtures are just warm, mix together and stir well until fully emulsified; Pour into pots or jars.

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Honeyed Ginger Cake

Time for a really nice cake to brighten up the summer.
6oz butter or margarine 3oz muscovado sugar .
3 tablespoons heather honey
2 eggs
4oz chopped crystallized ginger
½ teaspoon powdered ginger
9oz self-raising flour

Beat the butter, sugar and honey together. Add the crystallized ginger. Beat whilst adding the eggs slowly. Fold in the flour and ginger powder. Put in a well-greased tin and bake for 1¼ hours at 150ºC

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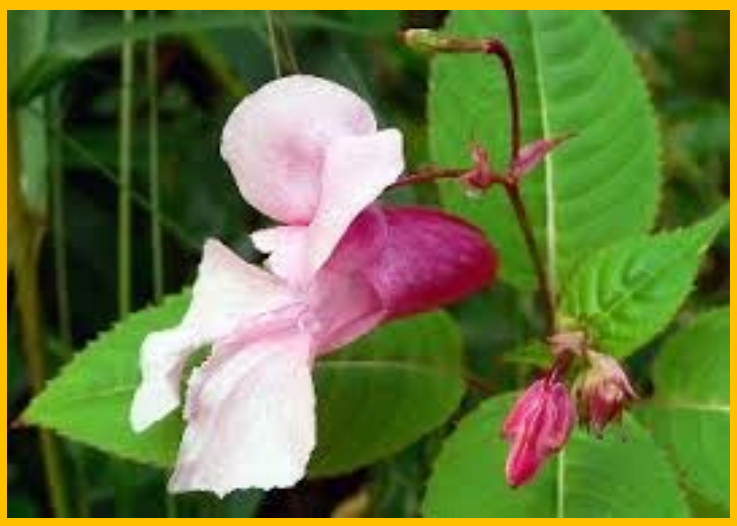
Beeswax Dry Skin Cream.

1 oz Beeswax
1 oz Pure Lanolin
5 fl oz Almond Oil
30 ml Rosewater
¼ tsp Borax

Method.
Heat together the Beeswax, Oil and Lanolin in a water bath until melted; Heat the Rosewater, add the Borax and stir until completely dissolved; When both mixtures are just warm, mix together and stir well until fully emulsified; Pour into pots or jars.

Himalayan Balsam

Himalayan Balsam is a plant that has caused more controversy and argument between beekeepers and conservationist than any other. The Environment Agency regards it as similar to Japanese Knotweed and Ragwort so it should be eradicated. Conservation bodies such the Wildlife Trusts organise working parties to pull out and get rid of this invasive weed. Some of you, including me, may be members of these same conservation organisations. As a conservationist, I support eradicating non-indigenous plant species, including Himalayan Balsam, but honeybees really love it. Himalayan Balsam is a native of the Western Himalayas with the colloquial name of "Kiss me on the Mountain". The pink hooded flowers have the appearance of a policeman's helmet. It was introduced to Kew in 1839 as a greenhouse plant; from there it escaped into the wild. It is now naturalised in the British Isles and many other countries. It spreads along river banks and its dense growth suffocates indigenous plant species, plants that birds and small mammals rely on. It chokes water courses so causing flooding and when it dies back, it leaves bare patches along river banks causing soil erosion. Its spread rate in the UK has been estimated at 645 km2 per year and an extensive stand of Himalayan Balsam may reduce species richness by 25%.



Its high nectar yield attracts pollinating insects in preference to native plants. Black spherical seeds germinate around February/March and the plant grows very quickly, reaching a height of two metres or more. It flowers from July until the first frost. During the autumn, seed pods start to form; when ripe and disturbed, these explode releasing the seeds. Medium sized plants produce on average 700 to 800 seeds which can be ejected seven metres. The flowers produce 47% more nectar than any other native plant so are a major attraction for honeybees and other pollinating insects. In some areas the honey flow season can be extended up to two months to the end of September. A reasonable colony of bees can easily fill two supers. Himalayan Balsam is an invasive weed. It is an offence under the Wildlife and Countryside Act Schedule 9 deliberately to propagate or encourage it. Yet our bees pollinate it so ensuring fertile seeds for the next year. Moving hives into an area where there is much Himalayan Balsam could be flouting the law. However, proving such a case would be difficult, especially if the beekeeper habitually moved his colonies into a certain apiary every year to over-winter. By chance, there is a large area of Himalayan Balsam close to that apiary. The extended season has led to strong well fed colonies wintering well on this forage. Both fortunately and unfortunately, Himalayan Balsam is here to stay. Totally eradicating it is unlikely - like the grey squirrel, it cannot be done. However, the honey is just great! And here in Lancashire our bees would struggle without it.

Using Oxalic Acid in December.

Some folk have very definite views about using 'poisonous treatments' on bees - often without evidence. This is an account of what I found when I treated my bees with oxalic acid at the end of the first week of December 2015. You may remember it was cold and the bees were not active! Each hive had its entrance block removed and was treated with 4g oxalic acid dihydrate by evaporating the oxalic acid into each hive. I then monitored the hive drop on 5 of my forty two colonies for seven days using an open mesh floor with a fitted inspection board (white correx sheet). Four of the hives recorded were chosen randomly but hive 5 was deliberately chosen. This was because the hive was severely infested with varroa in early July 2015 and, although it was treated with Apiguard both in early July and again in August, I wanted to check it again. The cost of oxalic acid treatment is less than 2p per gram. As all the colonies had been treated with thymol/Apiguard in August, each should have had only a few mites.

	Hive 1	Hive 2	Hive 3	Hive 4	Hive 5
Day 1	23	13	0	19	6
Day 2	59	22	2	15	3
Day3	68	40	0	8	1
Day4	29	40	2	18	3
Day 5	45	35	0	5	0
Day 6	11	10	0	8	0
Day 7	9	7	0	5	0
Totals	260	177	4	78	13

I was suspicious of hive 3 results so it was treated a second time on day two in case I had not treated it properly the first time. What do the results show/prove? Unless I actually monitor drop, I have absolutely no idea what the mite population is. I had no idea which hives would benefit from treating. From the results Hives 1 and 2 appear to have been worth treating, hives 3 and 5 showed so little mite drop that treating was almost a waste of time. The results show that there is considerable variation in Varroa populations but I had no idea which colony had a large population and which had a negligible population of Varroa in the winter. Mite drop is spread over several days. Is this because the mites do not die immediately or are they not dislodged unless the bees move around in their cluster? Did the mite population increase after treatment in August/September, as the bees continued to produce brood, explaining hive 1 and 2 results? Although it has worked very well elsewhere, was Apiguard less effective in hives 1 & 2? Do the bees in Hives 3 and 5 groom better removing Varroa naturally? If so, are they worth breeding from? I have no idea about the answers to my questions! However, getting rid of any mites must help colonies survive.
For the record Oxalic acid is an organic chemical with only carbon, hydrogen and oxygen in its molecular structure (C00H) 2.2H20). It is found in
some plants (rhubarb leaves are a classic example) and in honey in very small quantities. In larger quantities it is poisonous as are many things we use daily, so you must not eat, drink or inhale it. Do not use it in supers that you want to extract honey from next summer. It is important to keep our varroa levels down to below 800 mites per colony at any time of the year to avoid problems with the Varroa transmitted viruses and their side effects like deformed wings, paralysis, shortened life of workers and less foraging time before death. If you have missed using the oxalic acid window please think about reusing thymol products in the spring. I know that Apiguard and other thymol products reduce Varroa mite populations effectively whatever the air temperature as the hive temperature is always above 200C in and just above the cluster. Oxalic acid can be used by either evaporation or trickling when there is no brood present. If there is sealed brood some mites will escape treatment inside the sealed cells where the mites will be reproducing.

Note:

This shows what an effective treatment oxalic acid can be. Since the acid will not affect mites in sealed cells, treatment is most effective when the colony is as broodless as it ever gets. This depends on temperature so, sealed brood will be at a minimum three weeks after a cold spell when it has all emerged; if in doubt, the period between Christmas and the New Year may be a safe bet.

Where Is Beekeeping Now?

Fundamentally, beekeepers in the UK are optimists; we keep wild creatures and rely on the British weather for success. Perhaps this uncertainty is the key to understanding why British beekeepers also seem to be such innovators, forever tinkering with equipment and techniques to find the elusive perfect combination. Sadly, much effort appears to be misplaced into reinventing wheels. Beekeeping in Britain is more popular now that it has been since the Second World War, when additional sugar rations were a great incentive to become a beekeeper. The turnaround has come from the very high profile campaign initiated by the various beekeeping organisations over the past three or four years. This campaign was intended to highlight the plight of the honeybee and the lack of government funding, but once powerful 'mainstream' institutions such as the Cooperative Wholesale Society, the Women's Institute and BBC Radio 4's Archers became involved, it mushroomed and morphed into a recruitment campaign, what better way to help the bees than to take up beekeeping? With this increase in popularity, we have seen shortages of bees, equipment, courses, and mentors. There is a fashion element to beekeeping now but we must not dismiss newcomers for this. Amongst the many who will dabble for a few years and then drift away, there will also be our future experts,organisers, teachers, and many who will simply gain much pleasure from the craft. Time invested now in accommodating the surge of interest is an investment in the future of British beekeeping. Most beekeepers agree that the craft is difficult to teach yourself successfully. To use a phrase that circulated in the USA during the peak of CCD debate, we all start out suffering from PPB (p**s poor beekeeping) simply because we do not know any better. Training beginners, formally or informally, is an investment. It is encouraging that, although the surge of interest is relaxing a little now, the attrition rate on beginners' courses remains remarkably low. Whereas once a third of the attendees would have stayed the course for six to twelve weeks, now it is likely that two thirds will. It is also noticeable that many new entrants are coming from professional backgrounds where initial and continued training is the norm. They have a keenness to learn that we should aim to encourage. When we talk of education, some dismiss this merely as "taking exams". True, there are examinations and assessments there for those who are interested and, importantly, those who are tempted to teach should demonstrate their competence by taking them. The real value of education is not in the collecting of pieces of paper, but in broadening the outlook and understanding beyond the narrow slice already experienced by luck or by design. Many seasoned beekeepers could be accused of having one year's worth of beekeeping, repeated ten or twenty times. This manifests itself in many of the common assumptions that start out as rules of thumb to aid beginners, but become Beekeeping Laws: • Leave two queen cells in an artificial swarm! • Queen excluders are essential! • The National hive is sufficient for all needs! A useful concept is that of hive years: a person's exposure to beekeeping is the product of the number of hives and number of years. Clearly it fails as a useful measure at the extremes, and exposure is not necessarily the same as experience. However, using hive years as a gauge, a person who has kept twenty hives for five years has had much more exposure to beekeeping than someone who has had three hives for twenty years. This is helpful in determining who to listen to from the myriad of differing responses to any given question. The influx of beginners has highlighted how stretched and inconsistent existing training arrangements have become. It could be argued that in all the excitement over Varroa, we've taken our eye off many other things. The government's Healthy Bees Plan emphasises the need to support education for beekeepers, and is acting as a catalyst and enabler for change. Thus far it has funded 'road shows' run by the National Bee Unit, improvements in design and content for the National Bee Unit website, and has part or wholly funded development and delivery of new educational materials and courses. The BBKA's 'Course in a Case' initiative is developing a series of off the shelf training materials to support beekeeping course delivery at a local level, and the National Diploma in Beekeeping Board is delivering a number of new, targeted, train the trainer courses to improve tutor skills and confidence. All this represents an investment in the future of beekeeping through training, one which will reap dividends in years to come, and yet we're only two years into the ten year Healthy Bees Plan. Alongside the general publicity for beekeepers and beekeeping, a number of fringe evangelists have been given the oxygen of publicity. Often a fresh pair of eyes can see solutions and methods that others cannot because they are too entrenched, but evangelists differ from the normal enthusiastic or inventive newcomer. They appear to see beekeeping as a means to an end, not a pleasure in itself, and approach with a firmly set view on how things ought to work. I liken these beekeepers to the sort of pet owners who insist that their dog or cat has a strictly vegan diet because that's how they choose to live. These evangelists are the people who like imprecise terms like "natural" and "interference" and who rail most loudly against pesticides. Whilst their arguments are often very appealing emotionally, there is a degree of cherry□picking going on as regards their supporting evidence. Rationale for change is often wholly negative,. they choose a different course of action not because it is demonstrably better, but because the status quo is apparently so flawed. Since beekeeping is merely a means to an end they lack the breadth and depth of understanding, and some of their views of current practice verge on the bewildering. Thus we are told that our bees will be happier, healthier, and untroubled by varroa if only we adopted a certain pattern of box to keep them in, or that much of our problems stem from our ruthless culling of every last drone in a colony. Really? Then there are times when the facts are side□stepped altogether: just look at the arguments presented against neonicotinoids. We are so often told that certain pesticides have been "banned across Europe", when in fact this is not the case. It would be quite entertaining if they weren't so earnest! Fundamentally, our beekeeping would be far poorer if there was no room for diverse approaches and innovation. The collective term for a group of beekeepers is, after all, "a disagreement of beekeepers". What we must recognise in the evangelists is their passion and energy; we need to offer considered advice when they are ready to accept it, and steer them away from the more outlandish fringes, re-inventions, and miss managements. We should bear in mind the old aphorism that "there are none so righteous as the recently converted" and accept that this will take time and patience for all concerned. Beekeepers love to innovate. What is clear is that they are not reading too far back through beekeeping history, or they'd see that some ideas crop up time and again, have a short flowering of popularity, and then lie dormant for decades

waiting to be rediscovered. The question they should be asking is "why did they lose popularity?" I remember my father and other local beekeepers making Catenary hives, after Bielby's design, in the 1970's. Much was hoped for this horizontal hive with unframed combs that allowed bees to draw comb to a natural shape; sadly it never lived up to its promise of happier, healthier bees. Brace comb was always a problem. The Catenary hives served as an adequate container for bees, all the experimenters drifted back to 'square box' hives. Fast forward thirty years and we see again that horizontal hives with unframed combs are the innovation some have been waiting for. When I saw that one of the most prominent top bar hive advocates had published photographs of queen excluders for use in queen raising and swarm control within such hives, I realised then that the fervour for revolution was steadily being supplanted by the desire to innovate. Much has been spoken in recent years of the impact of the honey bee (or lack of them) upon the environment, but as climate change becomes accepted it is clear that we must think how the environment will impact upon the honey bee. Back when it was called "global warming" I suspect many beekeepers harboured thoughts of Mediterranean climates and bumper honey crops. Sadly, it would appear that the reality for Britain will be more changeable weather, as if four seasons in one day were not enough. If the past few years are anything to go by, we have seen an emerging pattern of good springs and autumns, but poor summers. The bees that will survive and thrive in those conditions are not the ones attuned to a long winter and a short, predictable summer. As beekeepers we may need to consider early and late nectar crops as more significant than the traditional July flow. Just as importantly, we may need to ensure colonies are encouraged to produce and mate queens in early good weather, rather than holding off and risking a washout summer and drone layers. We need to be selecting stocks that are suited to current and changing conditions, not some past view of the forage and seasons. In many regions two species of plant are key in supporting the bees during these extended spring and autumn seasons: Oilseed Rape, and Himalayan Balsam. The latter attracts the particular ire of conservationists but the winter survival of both honey and bumble bees increase greatly from the late nectar and pollen that the balsam gives, in a way that ivy does not always satisfy. One particular danger on the horizon is that of Genetically Modified agricultural crops. I'm not saying that GM crops are dangerous in themselves, but in the UK the term 'GM' has become synonymous with 'adulterated' or 'unnatural'. The issue is that, unlike all other farmed livestock, we cannot contain honey bees with arbitrary boundaries. Our bees forage over any flowering plant within a radius of several miles. If GM crops are planted, we cannot stop bees collecting nectar or pollen from these crops. How then would this impact labelling of honey and other hive products? Given the current general feelings towards GM, it would seem we'd squander all the goodwill generated towards beekeeping, and local honey in particular, if we had to label our produce to indicate the possible presence of GM constituents, in the same way that many foodstuffs "may contain nuts". Indeed, I suspect we'd see consumers actively choosing imported honey from areas without GM agriculture on the basis that it was more 'natural', 'pure', or 'unadulterated' than British honey. A worrying prospect.

Nosema and Dysentery.

Some readers will remember that Prof. Len Heath was fond of quoting Josh Billings:

"The trouble with people is not that they don't know, but that they know so much that ain’t so.”

I am sure that if Len had seen the report of the Devon Nosema survey then he would have been reminded of that thought. Two more quotations, rather more to the point:

Dr Leslie Bailey, (1981) "A survey of over 100 naturally infected colonies, during a winter when dysentery was prevalent, showed that although it was clearly associated with the death of many of the colonies dysentery was not caused primarily by *N. apis.* "
Ingemar Fries, (1997) "No specific clinical symptoms are connected with *N. apis* infections. Heavy infections are often correlated with dysentery, not because Nosema infections cause dysentery, but rather that when dysentery occurs, the disease is aggravated and effectively spread in the honeybee colony."

To summarise: bees may have Nosema without dysentery, or dysentery without Nosema, or they may have both at the same time. Thus dysentery is not an indication of the presence of Nosema, despite the common and persistent belief that it is; this is another item of "knowledge" which ain't so.

Shakespeare .

For so work the honey-bees, Creatures that by a rule in nature teach The act of order to a peopled kingdom. They have a king and officers of sorts; Where some, like magistrates, correct at home, Others, like merchants, venture trade abroad, Others, like soldiers, armèd in their stings, Make boot upon the summer's velvet buds; Which pillage they with merry march bring home To the tent-royal of their emperor: Who, busied in his majesty, surveys The singing masons building roofs of gold, The civil citizens kneading up the honey, The poor mechanic porters crowding in Their heavy burdens at his narrow gate, The sad-eyed justice, with his surly hum, Delivering o'er to executors pale The lazy yawning drone.
Henry V, I. 2

A new source of pollen?

Today I observed what for me was a 'first' in over 50 years with bees. I watched one of my own bees, in a field not 300 yards from my apiary, assiduously collecting pollen off the head of some Timothy (or possibly lesser catstail) grass.

The bee's body was dusty with the pollen and she was filling her corbiculae. Until now, whenever people have approached me for local honey as a means of building up immunity to hay-fever, I have always been scrupulously honest in advising them that the majority of hay-fever cases are caused by a reaction to grass pollens and explaining that honeybees do not visit grasses. Thus there would not be more than 'background levels' of grass pollens in the honey and therefore no real prospect of building up immunity through eating honey (other than the fact that honey is generally good for one's immune system). Perhaps I should be slightly Machiavellian in future and encourage such customers to talk themselves into buying my honey!. I do not know if others have observed bees working grass

Bee Intelligence, Sleep and Memory.

Intelligence:
Research has provided insight into some stunning cognitive capabilities for such a tiny brain, as well as some especially fascinating anecdotes that liken bees to humans. For example, just like the human capacity to recognize faces, honeybees show the ability to discriminate between two different human faces. A major feature of this trait in humans is that it breaks down when the face is inverted 180degrees. This same feature was observed in honeybees. Further, bees can count up to four objects when they are encountered sequentially during flight. It appears that bees can navigate to food sources by maintaining a running count of prominent landmarks that are passed en route, provided this number does not exceed four.

Sleep:
Children often ask what bees do at night, wondering if they are always busy doing something, or if they too idle sometimes in front of the TV. We know from ancient times that the sleep of the labourer is sweetest. Accordingly, honeybee foragers are among the first invertebrates for which sleep behaviour has been described. Foragers have strong circadian rhythms; they are active during the day and sleep during the night moving through three sleep stages. However, young bee’s exhibit sleep behaviour consisting of the same stages as observed in foragers yet pass more frequently between the three and stay longer in the lightest sleep stage. These differences in sleep architecture represent evidence for plasticity in sleep behaviour in insects. The harder they work - the sounder they sleep!

Memory:
During evolution, honeybees have developed sophisticated sensory systems and learning and memorizing capacities, essential mechanisms that do not differ drastically from those of vertebrates. To forage successfully, a bee has to learn and remember not only the colour and shape of flowers that contain nectar and pollen, but also how to get to them. Since the species of flowers that are in bloom in the morning are likely to be replaced by a different species at a different location in the afternoon, the bee has evolved an impressive ability to learn and memorize local features and routes, as well as the time of blooming, quickly and accurately. Thus, having found a nectar-bearing flower at a particular time on a particular day, a forager can remember the task and the time at which it was completed, and visit the flower at the same place and time on the following day. The time sense of the honeybee can modulate their response to a local stimulus according to the time of day. Honeybees can learn scents or colours in a time-linked process and remember them in a 24-hour cycle. Circadian systems permit organisms to measure time for adaptively significant purposes. Bees synchronize their behaviour with daily floral rhythms, foraging only when nectar and pollen are at their highest levels. At other times, they remain in the hive, conserving energy that otherwise would be exhausted on non-productive foraging flights.
The processes of learning and remembering are undoubtedly more sophisticated in primates and mammals than in insects, but there seems to be a continuum in these capacities across the animal kingdom. The abilities of an animal seem to be governed largely by what it needs in order to pursue its lifestyle, rather than whether or not it possesses a backbone. The properties of learning and memory in insects have been shown to be well suited to the requirements of the tasks that they have to perform. Honeybees can plan their activities in time and space, and use context to determine which action to perform and when.

Wasp Traps

This month I will depart from dealing primarily with equipment, to consider wasps. 'BeeBase' sent out a 'wasp warning' because many beekeepers were reporting the presence of large numbers of wasps in apiaries and around their bee hives. This was expected because the warmer than usual spring saw the rapid build-up of our colonies resulting in early and prolific swarming. Wasps being members of the hymenoptera family, which encompasses bees, wasps and ants, should also have done well! Why? The warm weather has meant a good supply of pollen & nectar for our bees but also caterpillars, and other 'creepies', which wasps chew-up, regurgitate and feed to their larvae. Bees evolved from wasp by becoming vegetarian and used pollen as a protein source instead of insect juices. Why are wasps a pest to bees and picnicker's in the late summer? A bee colony is perennial while a wasp's is annual which means that in late summer new virgin queen wasps and drones are produced to mate. The drones die and the fertile queen wasp (or hornet- just a big wasp) hibernates (often under the roof of a hive) to over winter and found a new colony in the spring. The old queen left behind will lay less and eventually dies which means that just like in a bee colony with no queen the colonies organisation and purpose is lost. One of the factors that keep the worker wasps collecting insects to chew up is that when it is fed, a wasp grub rewards it with a drop of sugary liquid. When the old queen is failing she lays less and less eggs so there are fewer grubs to give the worker wasps their 'sugary fix'. What do they do? Go in search of jam butties or honey. The wasps will smell the honey and home into the hive where they will try to gain entry. A strong colony will prevent their entry and kill any persistent ones but at a price! Workers bees will sacrifice their lives for the colonies survival but a strong colony should be able to fend off an attack. However, if it continues then the defenders weaken due to the loss of guard bees and there becomes a point where the colony gives up and the wasps get 'free' entry. Once this happens the colony is doomed and the brood, honey and bees will be carted off! So what can we do?. Keep strong and healthy colonies. Do not spill honey or syrup and keep the opening and so exposure of combs to the minimum. Reduce the hive entrance to make it easier for the bees to defend the colony. With severe problems reduce the entrance to a single bee-way. A small tube entrance can be easier for bees to defend. Having a floor to your hive with a devious entrance route is said to help. Some dispense with the normal entrance and have an 'up and over' one under the floor. Others place a piece of glass in front of the hives entrance which the bees are able to circumvent but the wasps try to go through!. BeeBase suggests closing open mesh floors with the floor insert. I assume that this is to reduce the 'area of honey odour' which attracts the wasps. However, several Beekeepers testify to the fact that the wasps get 'confused' and try to enter through the direct route - the mesh. If colonies are weak/under strength but healthy then unite them so they can fight off the attackers. Controlling wasp nests around your apiaries by destroying nests in the spring and summer. This is clearly a good method of reducing the overall wasp population and reducing robbing problems in the autumn. Wasps do have a place in nature and destruction of wasp colonies on a wide scale will be disadvantageous to the environment, especially if you are a gardener as it has been suggested that a single wasp nest will catch 5 metric tons of insects through the course of the summer!. Trapping wasps in the apiary. Placing wasp traps such as jars/bottles containing a wasp attracting mixture will help. Wasp will tend to go to these traps as an easier option and drown. There are commercial traps available in garden centres and also one called WaspBane and waspinator (maybe a new acting part for Arnold now the Governorships is over!), which may be more effective and easier to use.

A simple wasp trap.

Take a plastic pop bottle and cut off the top third. Then invert it and placed into the lower portion, which is baited with a wasp irresistible mixture. This works because the wasps are attracted by the bait odour and enter/fall into the trap but will find it difficult, but not impossible to find the small entrance. Just like a lobster pot! Mixtures Bait mixture are like many things in beekeeping – every person you talk to has their favourite brew! However, the following pointers might help you decide on your brew:

Never use honey unless you want to catch bees. Add a watery mixture of vinegar, sugar and salt. The wasps are attracted to the sweet and sour scent yet bees don't seem to be attracted by this sour mixture. Over ripe fruit seems to attract wasps – they like my apples! Mix 2 level tablespoons of Whiskas "Sardine and Tuna" cat food into 200ml of warm water and pour into the wasp trap. (You may need to spoon larger chunks of cat food into the wasp trap). You can even replace the solution of water with mashed grapes, sugar and lemon juice, sugar and water, soda, vodka and orange, wine, maple syrup and water, etc.

Tips. Keep the wasp trap out of the rain as it will quickly fill with rainwater. Hang the wasp trap in a tree or shrub with the base of the trap well clear of vegetation. Locate traps well away from your hives otherwise you will attract more wasps to them. Place on trap upwind and one downwind of you hives at least 5 metres away. Empty them regularly as they fill up surprisingly quickly. Take care that they are all dead!

The down-side of wasp traps is they also attracts and traps beneficial insects such as lacewing and hoverflies which are a natural pest control of aphids

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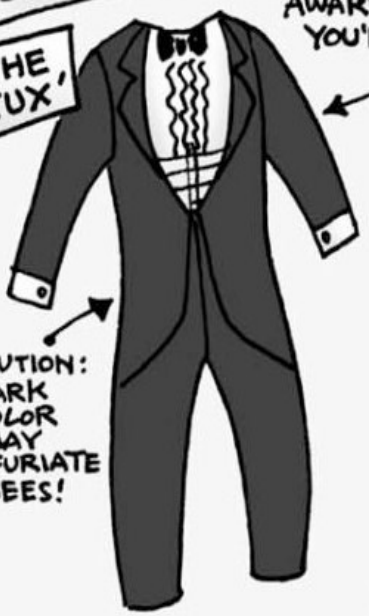

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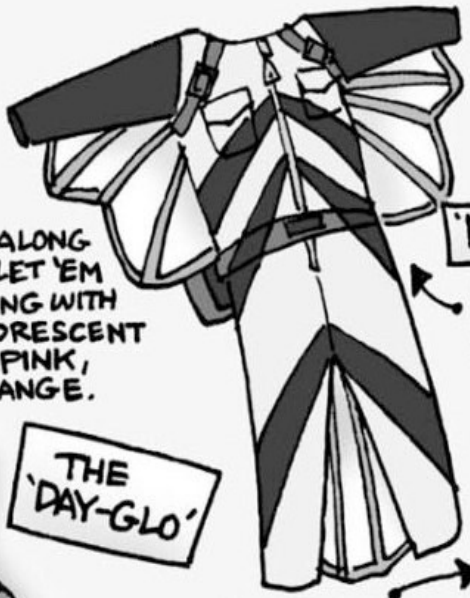

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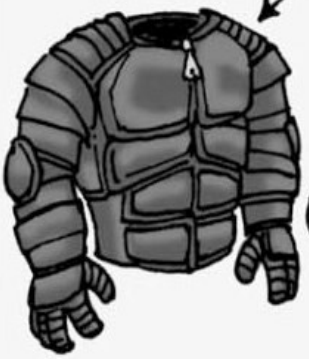

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WRRRRRR...

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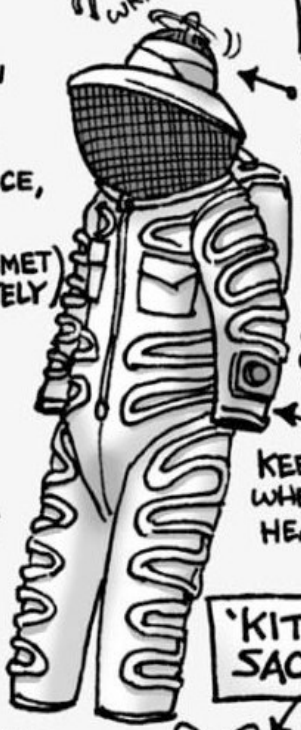

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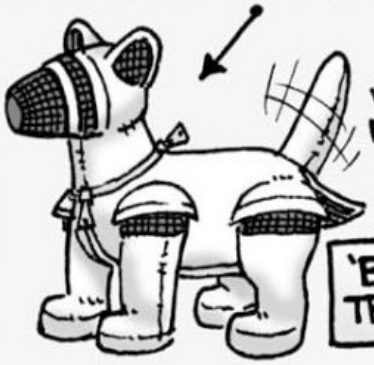

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Respect your Neighbours

There are some sound reasons to be aware of and be respectful to your apiary neighbours. The first is disease; we all have a responsibility to avoid the spread of diseases. It cuts both ways, you don't want theirs and they don't want yours. Make sure your bees are healthy. Know about the location of neighbouring apiaries and try to be aware of the health of their bees. Treat swarms with great care; isolate them for a time until you are sure they are fit and well. The second reason is forage availability; with a doubling in our membership in two years there is an increased possibility of overcrowding of hives in an area. Again this cuts both ways, overcrowding disadvantages all parties. The only realistic way to find out about neighbours is through contact in your division and with neighbouring divisions. Please use the network of contacts that exists in our association when you are setting up a new apiary and be particularly mindful of disease if you take swarms collected by another beekeeper