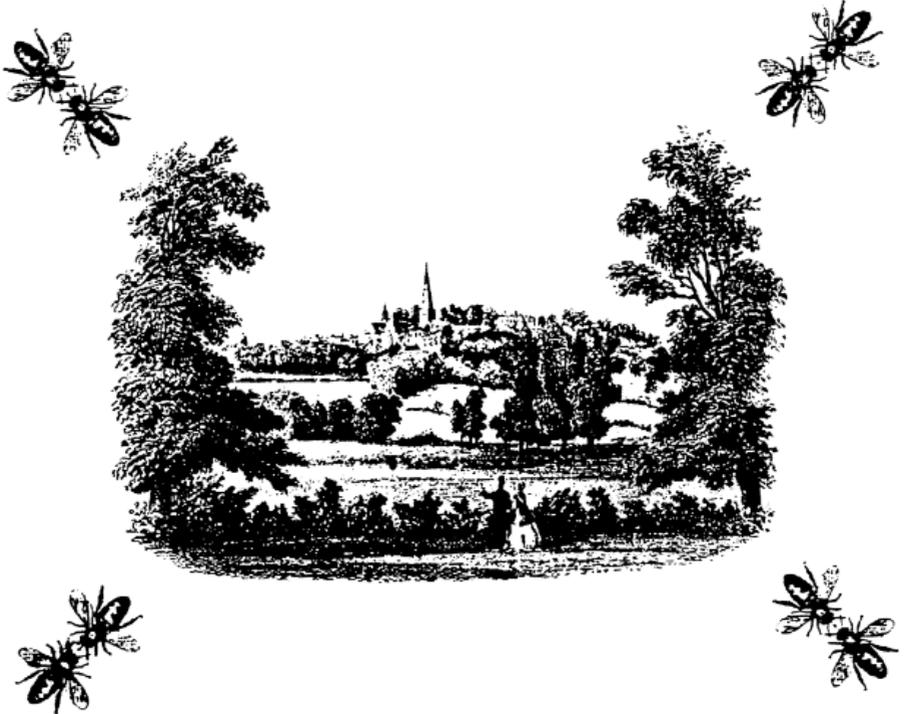


Volume 78 Spring 2022

Forager



Celebrating Forager's 76th Year

Harrow Bee-Keeping Association Magazine

HBKA news and information

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HBKA Hatch End Beekeeping Supplies REVISED BUSINESS HOURS DURING COVID

The HBKA Trading Hut will only be open on a *limited number of specific dates* advised in Gloria's email during the pandemic.

The Hatch-End HBKA Trading team is led by **Gloria Smith**.
Special arrangements have been made during the pandemic.
Please email your order to Gloria for a 'Click and Collect' type pick-up. 2M Social distancing applies. Payment by bank transfer if poss' please - quote your name & Member No. as Ref.
Gloria will advise your collection date and time!
See Gloria's email regarding all the details on this change.
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Forager Editorial Calendar

Issue No / Publication Dates	Copy Dates
Volume 78 - Summer 2022	14th May 2022
Volume 78 - Autumn 2022	13 th August 2022
Volume 78 - Winter 2022	12 th November 2022
Volume 79 - Spring 2023	11 th February 2023
Volume 80 - Summer 2023	13 th May 2023

Contributions intended for inclusion in Forager should be sent to the Editor Rod Parker.

The copy dates for future issue are the 2nd Saturday of February, May, August, and November for the respective – spring, summer, autumn, and winter issues.

Editor's email: rod.parker@ntlworld.com

--- During the Pandemic the HBKA face to face Programme has been suspended.

DATE	EVENT & TIME	LOCATION
NORMALLY EVENTS ARE HELD AT HBKA HATCH-END APIARY UNLESS DATE AND LOCATION IS SHOWN IN RED TEXT		
<i>Work Party</i> is 1 st Sunday each month	'WORK PARTY' @ Hatch End Apiary Starts 11am till 1.00pm <i>No hives opened until after 12.00</i> <i>Due to Pandemic await email instructions</i>	Hatch End Apiary HA5 4EA <i>Additional Procedures must be followed.</i> <i>See page 13 to 15</i>
<i>Education/ Training Days</i> are held on 2 nd Sunday in each month	Starts 11am till 1.00pm (unless stated) <i>Due to Pandemic await email instructions</i>	Normally ABC Hatch End, for meetings held at other locations <i>see dates and location in RED text</i>
<i>HBKA Committee meetings</i>	Starts 8:00pm <i>Now by Zoom until further notice</i>	Winter Committee meetings are held off-site
<i>Other Meetings Dates</i>	Starts 11am till 1.00pm, unless a different location is shown	ABC Hatch End
2022		
2022 Coronavirus situation.	<p>HBKA's current face to face meeting programme has been put on hold during the current pandemic/ endemic? Committee decided that for the time being these restrictions would continue, despite our Government removing most restrictions. Many of our older members are not ready to resume normal contact yet, despite this, HBKA have managed to run all the scheduled Education programme via 'Zoom' video meetings held on Sundays at 12:00 noon, organised by Eileen Samuroff and Rosie and Colin Bullock, plus the Begineer's Course will be held. <i>Details by email.</i></p> <p>Watch this space or also look at the HBKA FaceBook page for more information.</p>	

Editorial

It is the end of February and spring should be around the corner, but we are still experiencing what seems like a continual series of winter weather fronts racing across the UK driven by the Jet Stream high up in the atmosphere, with the occasional lull before the next storm hits us. During February we had had many frosty mornings and a series of very strong storms. We suffered some very high winds of around 70mph twice and this produced some damage to my garden, a fence panel and to some guttering.

I have checked my bees and fortunately all my hives were still firmly tied down to their stands, with the bees tucked up within each hive, despite many fallen trees around the hives. On most days the daytime temperature does not get above 10°C and this is too cold for the bees to be out flying. I checked over last weekend and the bees still have enough fondant stores probably until the end of March - should they decide to eat it.

Hopefully this year the weather will be kinder during the first half of the year and not repeat last year's poor nectar availability that led onto almost no honey crop and the death by starvation of many hives.

Bringing my news right up to date, what is happening to our bees seems inconsequential when you compare it to what the people of Ukraine are being subjected to by the Russian army. Russia's military action violates the territorial integrity of Ukraine and endangers its 44 million population.

I was lucky to have visited Kyiv in Ukraine in 2010 on a business trip, but I never thought it possible that this nation would be subject to such extreme whims of a despot Russian President.

I could go on and on about this terrible war, but that is not what Forager is really about. Let us hope peace breaks out soon.

Back to the bee related matters, Ukraine is a very big producer of honey and who knows what will happen to all their hives and the bees during this war. I have another connection with Ukraine, in my early beekeeping years, following the loss of my bees during a particularly bad winter, I replaced my bees with Buckfast bees (overwintered UK nucs) purchased from a commercial UK Bee Farm based in Banbury, Oxon. It's run by a Ukrainian with an English wife, Viktor and Lucy, who have around 800 hives spread across many nearby farms and apiaries.

Next up, we will be getting our swarm control management hat on, as we move to the months when swarming happens and I hope you find the page 16 article on Checkerboarding of interest.

Rod Parker



Beelines

February is the month of rain
Now the crocus bloom again
In search of pollen bees will fly
Just see their hive is warm and dry
March's days are often chill
So, feeders with warm syrup fill

Miss N. Hartland, 1997

Rainfall

November 2021 = 3.05 inches, December 2021 = 3.5 inches and January 2022 = 0.7 inch.

An article in the New Scientist suggests a warmer climate could be good. Some birds had lost 2% body mass. This may be due to change of body mass to surface area, thus helping with their thermo regulation. This could suggest that all life that are endotherms could get smaller. The demand for food would be less including smaller humans, even cows would let off less methane.

If we are lucky, we beekeepers have been deluged with Bee Christmas gifts. The ones showing bee motifs. I received a Pollinator Bee pack of seeds. It was shaped as a hand grenade full of a buzzing mix of bright and beautiful nectar rich wildflower seed beloved by honeybees.

Another was a book with two torn out pages from T. Nutt ***Humanity to honeybees***, a book very popular in the 1800s helped by its title. My gift came from a book shop in Brighton. This is the graveyard of bee books where only the fine pictures are saleable. The book was published 1832. My Xmas gift was dated 1861 and 1893. Mr. Nutt designed the Nutt Collateral Hive. So fine it was often worked indoors.

To continue the fast Bee history by J.D and BD Yates Study Notes 1997

1800

1819 Stewarton Octagonal Hive very successful with no Bee Space.

1853 J. H. Payne Cottage straw hive with a top hole for access to wood supers, which avoided supering-the hive.



1848 Parthenogenesis J. Dzeron

1857 German Johannes Mehring created the first honeycomb wax foundation or base panels. This is one of the most important inventions in modern beekeeping.

1877 Bingham Smoker

1887 N. B. Carr metal frame spacers

1874 BBKA formed

1876 Formation of local Associations.

1919 Harrow B K A



I would suggest you try to purchase a copy of Beekeeping Study Notes by the Yates, which holds all the information to be an informed Beekeeper.

An article was shown on TV that included a use for honey from many years ago. In an exhumed Georgian lady, who had a full head of hair i.e. a wig that was popular on both men and women. Concealed in the hair was a small metal container, which would have stored a dab of meat and honey. One to attract the maggots and the honey to hold them fast.

Basket making which covers all manner of cane baskets is covered at the Luton Museum in Bedfordshire. A man working between 1854 – 1889 made bug traps that were hung under your bed. Human hair can be used in beekeeping. Many years ago, a student approached me with a large paper bag as a gift. Inside was large heap of her hair, she

suggested I could put in my smoker to subdue the bees. My blouses prevented their use.

Many other substances have been smoked. Old rags, Puff Balls, I find you cannot improve on very dry rotten conifer wood. The oils present help a slow burn with a less acrid smoke.

Hive tools can vary. The late Dr. Timmins used a small carpet knife with its curved blade to lever out the combs. A small electrician cold chisel is ideal to separate stubborn wood boxes.

Our way of beekeeping has changed over the last fifty years. In the early days gloves were frowned on. You needed bare fingers to gently move the frames, catch that queen and be brave. The climate was cooler and hive population smaller, which reflected on crop yields. We all enjoy going through our hives in spring without stings.

Another bee tool which is absent now is the hand water spray to subdue the bees. This could be scented to help calm the bees. One of our local Bee Inspectors would thump hard the examining hive before opening it up. His theory was, following his hitting the hive, the bees were in such a panic running about the hive that they would leave him alone.

One mother of a Harrow beekeeper claimed she could walk along line hives swinging her wedding ring to discover a hive about to swarm. Alas the direction of swing has been lost in time.



The slide of HBA Bee tent 168 was made by members from Kenton. It became a keen feature at the Harrow Show, run by Dr. Timmins who flew foraging bees in the tent before coming to the Show. Most of us were reluctant to enter the tent with no veil or gloves.

Michael P Davey

Hatch End Apiary – additional apiary rules for 2022.

Will all members please ensure they comply with both the letter and spirit of these additional Rules.

These rules are in place to help prevent a reoccurrence of EFB.

We therefore ask all members to comply with them.



Do's

Do put on a clean washed full bee suit each time you visit the bees.

Do put on clean rubber or disposable gloves when you inspect bees.

Do clean your hive tools and smokers (including bellows) between hives (see next page for cleaning instructions).

Do make sure the lids of dustbins and the solar extractor are kept secure and bee proof.

Do dispose of wax very carefully. It may:

- Be wrapped in newspaper and placed in the dustbin provided;
- Can be placed in the solar extractor;
- Taken home, as long as you can recover and process the wax.

Do ask for help if you are uncertain about the appearance of brood.

Do place all frames for extraction immediately in plastic bags and seal before removing from the apiary. Please ensure no bees are trapped inside.

Do thoroughly clean any borrowed equipment (extractors, hive carriers etc.) before returning them.

Do use HBKA tools to maintain grass area around your hive.

Hatch End Apiary – additional apiary rules for 2022.

These rules are in place to help prevent a reoccurrence of EFB.
We therefore ask all members to comply with them.



Don'ts

Do not go onto the hive area unless you have a hive on site or are carrying out a designated task.

Do not move any bees **ON** or **OFF** the apiary.

The one exception is when the apiary manager **may** in some situations allow queens only to be brought on site.

Do not dispose of any hive waste wax or old frames with your domestic refuse.

Do not bring any hive waste wax or old frames back onto the apiary for disposal.

Do not remove hives or any component parts from the apiary unless they have been scorched on site.

Do not bring your own garden tools on site without permission from the apiary manager.

These pages are a summary of the main points. Please refer to the full document for more details.

**Hatch End Apiary – additional apiary rules for 2022.
These rules are in place to help prevent a reoccurrence of EFB.
We therefore ask all members to comply with them.**

Cleaning And Sterilising

Cleaning of equipment is required when used between hives and/or removed from the Hatch End site.

***Beekeeping tools and equipment (e.g. smokers and hive tools),
polystyrene hives and plastic feeders etc:***

Clean using a solution of washing soda crystals (Sodium Carbonate). This can be made up using 1 kg of washing soda to 5 litres of warm water with a dash of washing up liquid to help clean off propolis. Immerse the equipment in the solution, while using a wired brush, or similar tool to scrub off residues until the tools are clean.

Smoker Bellows:

Clean with a cloth dipped in the cleaning solution or disinfectant wipes.

Wooden Hives and wood and metal components

These must be scorched before removing from HE. HBKA will provide a blow torch. The wood should be heated until any remaining propolis boils and the timber darkens to a uniform coffee-brown colour. Make sure this happens in difficult areas such as the corners.

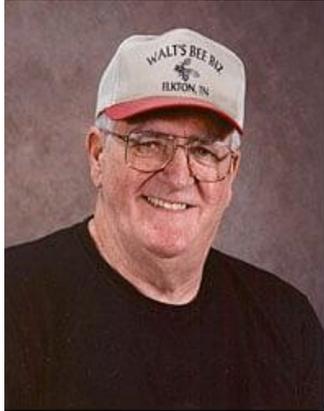
Cleaning extractors:

Extractors should be thoroughly cleaned out with cold water (hot water causes any remaining wax to melt and spread making it impossible to remove) using a hose pipe, pressure washer or shower.

Hive Carriers:

Clean with a cloth dipped in the solution of washing soda crystals.

Swarm Management by Checkerboarding
How it was found by Walter Wright.
Stopping honeybees swarming



Walter William Wright, August 24, 1932 - February 6, 2016
(Photo from American Bee Journal website)

If you have not heard of Checkerboarding (CB), then the article is for you. If you have heard the name, but you are low on detail, then read on. CB is new to me, but the good news is the inventor of this technique Walter Wright, shown above, left his papers for everyone to read at the American Bee Journal website.

As far as is known Walter (Walt) 'invented' CB and as he lived in the USA that was where CB was first used. But we now have UK beekeepers using it. To name a few John White, Anita Hunt and Gill Bannister who live in villages of West Berkshire and South Oxfordshire have authored a book on the subject, which I found very interesting, Swarm Management with Checkerboarding, ISBN: 978-1-912271-86-3. This book provides details of their experiences using CB adapted to UK wooden National equipment and our climate.

They confirmed that they also found CB did stop bees from swarming. Even Thornes Bees are mentioning CB in their monthly newsletter.

The UK's usual method of bee husbandry and Swarm Prevention is regular weekly inspections into each hive's brood box with certain necessary actions being taken when required. This happens weekly during a set period of months each year, normally late March to June and when done thoroughly it usually works. Before now I had not really thought much about this, but I suppose hive inspections do disturb the bees and they could cause a setback or an effect on each hive's expansion plans.

From what I know, most UK beekeepers use regular brood box (BB) inspections as part of their Integrated Pest Management routine, to stop or reduce swarming, to control varroa mites and most importantly spot outbreaks of disease. Interestingly, it seems that when asked many UK beekeepers report that they do not have a problem with their bees swarming. We may need to challenge that point of view, once you consider the work of our own HBKA Swarm Collectors Team, especially in 2021, when they collected more swarms than ever before. Swarms are problematical, if only because of the monetary loss through losing bees/ honey production and the nuisance they can cause some members of the public. If an inspection is delayed or missed for a short number of days, your bees could go into swarming mode without you knowing about it, until it is too late.

The arguments for Checkerboarding.

Done properly and at the right time, Checkerboarding will

- Prevent or delay swarming
- Increase hive population
- Produce a larger crop of honey
- Eliminate the need for invasive swarm-control manipulations
- Prepare the hive for winter without supplementary feed

Normally your colony will take care of itself. If it becomes strong enough and large enough, it will swarm and produce another colony. Observational knowledge suggests that when swarming occurs it depends on a number of factors and we think the final decision on whether to swarm is based on certain conditions in the hive. Walt observed that one of those conditions is the amount of food that is stored above the brood nest, what some USA beekeepers call the brood nest pantry.

Checkerboarding changes the configuration of the “pantry” above the brood nest, which causes the bees to postpone swarming. Walt believed that reproduction is secondary to self-preservation; this conclusion really does seem to be borne out by Walt’s observations. The bees delay swarm preparations, to clean up the mess in the pantry.

Some other ‘bee experts/ writers’ have said that checkerboarding “tricks” the fool bees into thinking that not enough food has been stored, so they keep storing more. Walt’s view was simpler, you have gone into their hive and changed their storage system into a

configuration that is not how they had it set up. They will not leave the hive until it's fixed, so they keep storing more honey in an effort to restore their normal configuration. That's not being tricked, that is the bees wanting their usual order reinstated. They will not swarm till the normal order is restored.

By taking advantage of this single mindedness, you can harvest a much larger harvest of honey, provided there is enough nectar availability. CB keeps your bees working for you instead of them flying away over your neighbour's fence or into a swarm trap. In addition, you get to head into winter with a larger and more robust colony.

In the USA, there are some misconceptions that surround checkerboarding. The most common one is that it interferes with the brood nest. As CB is performed above the main brood box it does not, but it does extend the brood/ stores area. **CB is a non-invasive swarm management technique.**

Before we start on the details, I suspect CB is not for everyone, as it does have some interesting side effects, which also need managing. For some there will be too much honey and the logistics of dealing with a hive that could need 11 or 12 supers or having to work in another way will put them off. If you purchase a copy of ***Swarm Management with Checkerboarding, ISBN: 978-1-912271-86-3*** for around £10, you can see a photo of a hive with 11/12 supers on it. Most beekeepers who have used CB have found workable solutions for the side effects of CB, from reading this book.

I would suggest that you try the CB technique out on one hive to start with, and bear in mind you will need to start preparations well in advance **to gather supplies** (see next page) to be used in your CB trial of your chosen hive. **Ideally you start during the summer of the year**

preceding the year that you work on your chosen hive. Saving drawn brood to fit a super, plus full frames of honey.

For each CB hive you will need the following supplies: -

- A super full of empty drawn brood frames.
- A super full of drawn brood frames filled with capped honey.

Timing is everything, in the UK you will need to start **adding** the extra CB supers in January latest, **December** is best for the southern parts of the UK.

Walt Wright was born in Burtonsville, Maryland, USA., then a country area, which is now part of the suburbia of a sprawling Washington, DC. He enlisted in the US Air Force to get electronics training and served as a radar repairman. After service time he joined General Electric in maintaining overseas sites of the Security Service. Still with GE, in 1960 he relocated to Huntsville, Alabama, Redstone Arsenal to make his contribution on the nation's quest to put a man on the moon. Development of the propulsive stages of the Saturn V moon rocket was accomplished by NASA on Redstone Arsenal.

In his late fifties he took up beekeeping to supplement his retirement income. Walt was aware that his previous experience provided very weak credentials to be considered a honeybee "expert."

Confident in his trouble shooting skills, he accepted the challenge "very early" to find the underlying cause of the swarming problem. He credits his excellent observation skills, sharpened by years of electronics troubleshooting, for solving the riddle. He was surprised that it was as easy as it was.

When he had completed testing his ideas, he formulated his hypothesis. After this had been in place for three years in the mid-1990s, he thought at first his hypothesis must be in error. Surely, thousands of beekeepers, looking into millions of hives, could not have missed the obvious.

His conclusion: beekeepers see, but do not observe, nor do they ask themselves why the bees do what they do.

He believed that honeybees are motivated by survival of the colony. Survival of the existing colony is priority one. In the spring, priority two is the generation of the reproductive swarm.

On investigation he found that not much had been written about this subject in the popular bee literature. Walt concentrated his investigation of swarming in terms of colony activities that support those survival objectives. His findings are a radical departure from literature conventional wisdom.

As an example, he claims that all the elements of "congestion", such as bee crowding and nectar in the brood nest, are deliberate steps to implementing the reproductive swarm process, and not the other way around.

As he put it - the literature has congestion as the "cause" and that's backwards.

The reason why most of us haven't heard much, if anything, about Walt's discoveries is because getting his observations published was very slow-moving process. Editors of the magazines used their role of weeding out suspect hypotheses and rejected most of his articles. In

fact, Walt started writing normal articles on general beekeeping techniques to build up his credibility.

He looked forward to presenting his observations through 'Beesource' (US online Bee website) that many UK beekeepers also use. He hoped it should not be necessary via this medium to appease editors or their advisors.

As a start, in telling it like it is, Walt announced point blank:

The mystery of reproductive swarming has been solved!

Swarm Prevention by Checkerboarding: Observations and Conclusions

One of the first observations Walt made during his work - he '**observed**' that there was an **obvious visible precursor** that showed very early swarm preparations were underway in a hive, he called it '**Backfilling**'. Up until Walt's hypothesis for swarm prevention arrived, beekeepers made weekly inspections of the brood box and that procedure disturbed the hive, it reduced bee numbers and possibly because of this beekeepers did not always detect swarm build-up. Walt observed Backfilling happening, most other beekeepers could see it, but didn't work out its significance or take any notice of it.

Backfilling occurs in some locations earlier than others. In the UK it can start in December, at a push very early January and in Walt's US location it didn't normally start until March, as his hives experienced much colder, longer winters.

Backfilling: This is the process of the bees reducing the brood cell area available to the queen for egg laying. The bees backfill brood cells that have been used for egg laying and brood rearing; these cells are backfilled with nectar. This usually occurs in an arc ABOVE the cluster, towards the top bar of the brood frame. ***When does it happen?*** As soon as winter is finishing in the USA and when the outside temperatures start to rise. I imagined that in the UK, with our variable winter temperatures, in a strong hive the bees could be starting this process much earlier especially in southern England. During one of our many short warmer periods that occur during UK winters. Whichever country you are in, the start date is not set in stone, it is weather dependent. It is when the hive's bees perceive winter is finishing that year. The timing of 'Backfilling' is very dependent on when the first fresh nectar supplies become available, and it needs to be warm enough to fly out without chilling the bees to the point they die.

Walt explained that his hypothesis's conclusion was that this reduction of brood cells ABOVE the cluster is designed to match the number of available brood cells with the post prime-swarm hive population (say approx. 1/2 the hive). If this procedure does not happen, then simply there will be too many active brood cells for the post prime-swarm nurse bees reduced population to cope with. The bees are safeguarding the survival of colony after swarming.

Checkerboarding (CB), or later Walt called it Nectar Management, is the adding of extra overhead honey stores and empty brood cell capacity for the queen to lay brood in for the hive.

CB is accomplished by substituting empty drawn brood comb and full frames of capped honey, on an alternate frame basis, in two boxes (of the same size), in the UK they can be two national supers placed on top of the existing normal National deep brood box.

These three boxes will eventually contain brood as well as stores during the honey season.

He also found that it took some time (a number of weeks) for the bees to react and accept the checkboard frames above them, especially the first time they are used.

It helps if you start installing these CB boxes early (December in the UK), so the bees get used to them.

Walt found that the queen excluder (QE) was also a problem, he found bees really didn't like them, so his advice was **do not use a QE** between the BB and these two extra boxes. If you must add a QE, add it on top of these three boxes.

If you need to add fondant stores, place it directly on the top bars of the bottom brood box (BB) within an eke – not on a crown board! (Important: Walt believed the bees saw the crown board as the top of their hive and did not like to pass through it even to feed)

Typical Checkerboard: Hive Setup (see Fig 1.)

The queen excluder, if present, should go on top of these three boxes, then moving down from the top of the diagram, the two National supers are placed on the original brood box, each with alternate 'super' sized frames of drawn brood comb and 'super' sized frames of capped honey, so that the top super frames immediately above the lower frames are different.

At position 1 in bottom Super A this frame has 'capped honey' and above it at position 1 in Super B is an empty drawn brood frame. More about how you achieve a supply of empty 'super' sized drawn brood frames later.

It is possible to use frames with just foundation, but the process works better with frames of drawn brood comb.

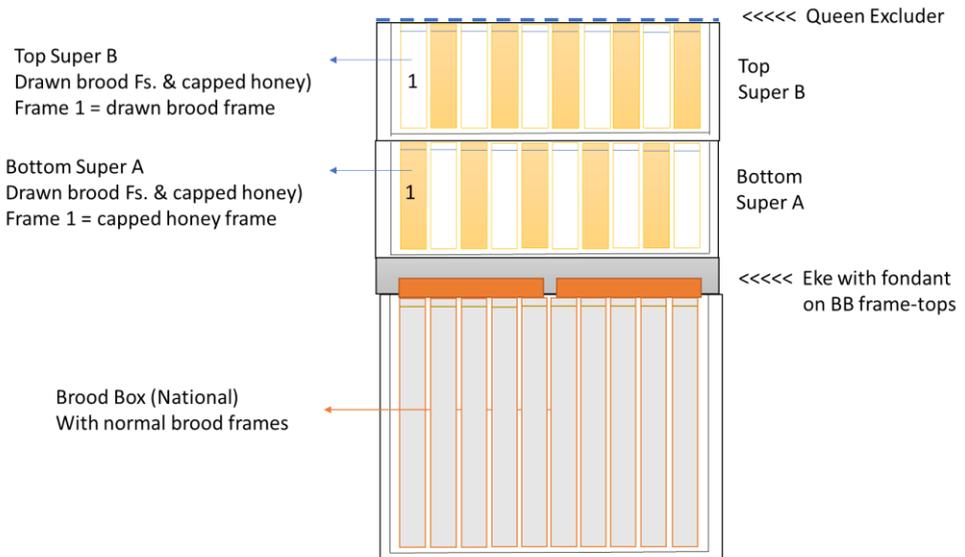


Fig 1: side elevation of typical Checkerboarded National hive

So as the hive comes out of winter each CB hive's side elevation should looking like the setup in Fig 1.

Fig 1 diagram shown includes an Eke with fondant.

Note the absence of a crown board.

The intent of checkerboarding was to provide nectar storage space continuously from the band of open feed cells at the top of the brood nest to the overhead supers.

If they would store nectar above the brood nest, it would take storage space pressure off (Ed. away from) the brood nest (American Bee Journal [ABJ], June 96).

In early May Walt reported that build-up swarms were replaced by queen supersedure (American Bee Journal July 96).

Walt wrote the following **very short final chapter** on this experimental concept and is written after the July harvest.

No Swarms!

The primary objective of the checkerboarding was to discourage the swarm "impulse". As best as Walt could discern, his hives had zero swarms in 1996. The reason he had to hedge on a positive statement



Picture showing Backfilling, courtesy of Thorne's Jan 2022 Newsletter

was that his team quit looking for swarm cells when it became apparent that the strongest colonies were superseding, and they were damaging supersedure cells by separating brood chambers. Walt could say positively that they saw no sudden population decreases, as would be the case after a colony having swarmed. An indication of population history for each colony was recorded by the date noted on supers as they were added. When you open a hive, even without that history, it is normally fairly obvious when a colony has swarmed. Your first reaction is "what happened to the bees?" But you know what has happened, without getting an answer to your question.

Hive configuration Post CB showing the position of the expanded brood nest.

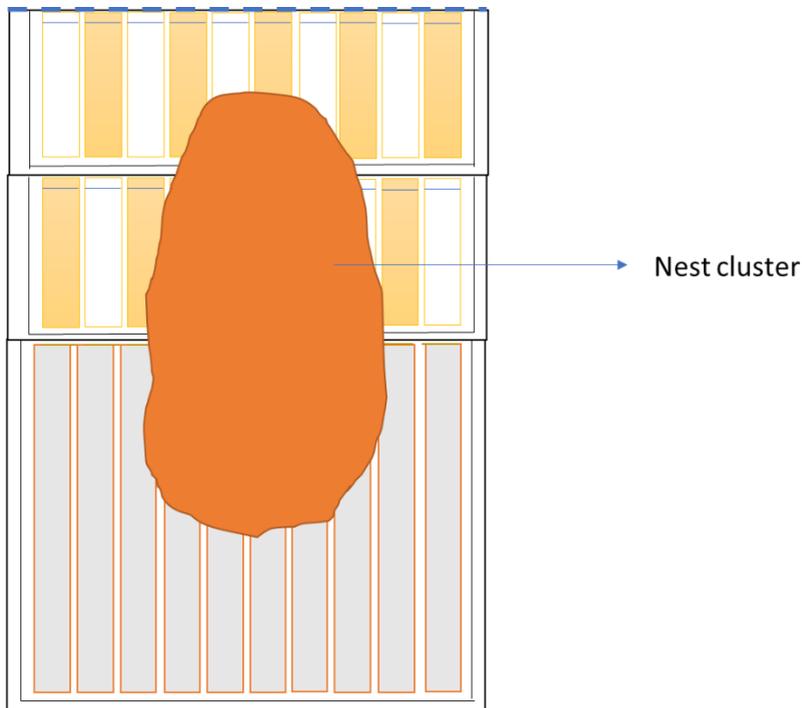


Fig 2: Checkboarded hive with nest cluster expanded into extra supers

Creating a full 'super' of drawn brood frames

During late summer or autumn after harvest in your normal hive (pre-CB) you should build up your brood frame reserves. This process does require good forward planning. To apply CB to you chosen hive, you will require 10/11 drawn 'super' sized brood frames. Walt suggested you add an extracted super of drawn ex honey wet frames above the existing brood box and let the bees clean it up and dry the comb out for about a week, then remove and move it to suitable storage. Before storing these frames carry-out the normal 'freezing the frame

technique' to kill possible wax moth eggs.

This way you have read-made drawn frames ready to use in the brood box when you start CB.

A full 'super' of capped honey frames

Simply keep back and do not extract a full super of capped honey frames, say 10/11 frames, ensure they are well capped and won't leak during storage until the following year when you start CB.

Rod Parker

Walt was good at keeping records (he called it a yard-log), here are some of his observations.

Locally, it was a "swarmy" season. The bees were slow building population because of severe March freezes and the resultant shortage of early season forage. Then in late April/early May, it all came in at once and didn't last long. The late surge of nectar availability pushed many colonies into swarm commit a month late. The late "swarmy" season makes the effectiveness of checkerboarding even more convincing as a deterrent to swarming.

We are pleased that the results of the checkerboarding test indicate that as a management technique, it has the potential for virtually eliminating build-up swarms. ***But, as commercial beekeepers we are really excited about the fringe benefits. Some are mentioned under 1 to 3 overleaf: -***

1. The acceleration of build-up fostered by unrestricted brood nest expansion might be used to good advantage by the package bee sellers. They have had trouble keeping up with demand lately.
2. Those commercial beekeepers who systematically requeen in the spring can save the operational expense of that management activity. If supersedure is automatic, the colony gets the best queen available with minimum colony impact on build-up.
3. The early population increase might make colony division more practical in our area.

Honey Production Was Both Disappointing and Encouraging

In years past, one or two of Walt's 130 colonies would be outstanding producers in any given year. They would fill two or three supers of drawn comb in April when other colonies were still operating below their capped overhead honey. Surplus bees early in the season would alert us to the need for more space above. When supers were added, they promptly started storing nectar there. We called these random producers of twice the normal honey for the area the **five-super phenomenon**. But, with the same maintenance, they did not repeat this performance in the following or subsequent seasons. **(Ed: To me this experience triggered Walt's first inkling of what became his Checkerboarding idea.)**

These indications of the five-super phenomenon are the same as the effects of checkerboarded overhead honey. That makes us think we now know what induces the phenomenon. Either there was storage space in the overhead honey, or the phenomenon hive superseded early, or both.

This year was an extremely short season. We shouldn't have to make excuses for harvesting a lower average than a normal year, but the potential for much higher yields is so great that we feel obligated to wade through it.

Transition to Expansion Mode

The literature search did not identify the differences in honeybee seasonal modes of operations. There are distinct activities, which are only accomplished in one or more operational modes. The most notable evidence of operation in what we call the **expansion mode**, that is fabrication of new comb. During the **build-up mode** no new wax is generated, but during the **expansion mode** they can draw enough wax (new comb) to store all available incoming nectar not used for backfilling the upper reaches of the brood nest.

Between these two modes of operation, there is a transition period when there is little storage of surplus nectar. Some of the reasons for the storage slowdown are: Peak consumption by drones, loss of graduating nurse bees to house bee duties, ingestion of nectar by the wax makers, and recycling old, capped honey. The transition period is about a full brood cycle and during this time some colonies gain, some lose, and some stay the same. When house bees start graduating to forager duties in large numbers, the transition is complete and the colony moves into the expansion mode.

In this short season, the peak nectar availability caught the bees in the transition mode of operation. The last week of April and the first two weeks of May there was an abundance of sources. Every out-yard

(apiary) had several of their favourite sources close at hand. Very little of this largess found its way into the supers. The folks who use hive scales to determine nectar availability would have recorded some grossly erroneous data during this season locally.

When the bees had transitioned to the expansion mode in mid-May, it was over. By the third week of May there was no forager traffic to and from the hives. A later flow in June from white clover for a couple of weeks kept the season from being a disaster.

Beekeeping Errors

Peak nectar availability during the transition notwithstanding, the season production shortfall can be directly attributed to bungling by the beekeeper. In the strongest out-yard (apiary), we had fractured supersedure queen cells on five of twelve hives. Three of those had to raise emergency queens, and as a result, missed rearing brood for a full brood cycle. Those three put up no surplus honey. Two others in that yard came out weak in late winter, one with worm-damaged comb in the cluster area and the other with a drone-laying queen. Both could have easily been salvaged by adding brood from stronger colonies. I was determined not to compromise the checkerboarding tests by taking brood from the strongest hives. The worm-damaged unit crashed, and the drone layer was successfully superseded, but it was too slow building strength to contribute much (less than 1/2 super). Averaging five zeros into the output of twelve hives wrecked the average value.

The strong yard produced 31 supers of honey divided by 12 hives for an average yield of almost 2.6 supers per hive (Ed: remember that US

supers are much larger than UK National supers). This average is very close to the normal seasonal average using standard management techniques in this area. But all the honey was produced by seven hives. If we remove the outright bungling and failure to take corrective action by the beekeeper, the average looks much better. Thirty-one supers from seven hives are slightly more than 4.4 supers per hive in a short season. This might equate favourably with a normal season five-super phenomenon, or it might be better. The average production of honey in this area with prevailing management techniques is about 2 1/2 supers. These 2 1/2 supers are stored after the transition to the expansion mode. With checkerboarding they store two or three supers while still in the build-up mode. This has the effect of doubling production in this area for a normal season.

We need to balance this talk of increased production with the reality of why we failed to achieve our normal seasonal average. To this point in the discussion of checkerboarding, when we have not mentioned the two weak out yards. The bungling beekeeper let two out yards get hit hard by Varroa in 1995. Emergency treatment in late summer salvaged all but one hive, but they were not strong enough in the fall to store winter supplies. They were given checkerboarded honey and a few words of encouragement in the early winter. They made it through the winter, but were slow building in the spring. We surmise that they had not optimized the brood nest in the fall. At one point late in the build-up, the out-yard log reports that they were about a month behind the strong yard in development. In mid-April there were patches of dried cells in the overhead nectar of 3 to 4 inches, indicating a major push forward in brood nest expansion. Despite their best efforts and apparent recovery from the Varroa problem, it was too late. The short

season restricted their surplus to about one super per colony average.

When the Varroa recovery units were included in the overall average, it fell below the normal-season, standard-management level. That was the disappointing part. The increased average production in the "strong" yard was the encouraging part.

Consumer Bees

A 16 by 20-inch column of wall-to-wall bees seven feet tall is a thing of beauty to the beekeeper. But, when this beautiful thing is present, after nectar availability, it's cause for panic. Zillions of bees with nothing to gather can consume a sizable chunk of the potential profits. "Consumer" bees had not been a problem in this area in prior years with standard management practices because the bees would normally start to reduce brood rearing during the build-up phase by backfilling the upper part of the brood nest. In fact, with a long season, hives in this area often do not take full advantage of nectar available toward the end of the flow. Storage in the supers stops while nectar is still available.

Faced with the choice of drawing off the extra bees for the fish bait market or moving the bees to a nectar source, the decision was made to move them about 50 miles to the mountains for the sourwood flow. Two weeks went by while we secured mountain locations and rigged trailers for transport. A day or two from being ready to move, white clover granted a reprieve. The bees were working again!

The bees were not moved. To trade one of our better honey sources for unproven locations in the mountains seemed like an unwise choice.

By the time white clover trailed off, the bees had limited brood production to a level where it seemed like it was a good time to treat for mites before cotton/ soybeans came in. Honey was harvested and Varroa treatment applied.

We would expect the problem of "consumer" bees to resolve itself in a normal build-up season and a more gradual trail off of nectar availability. If this does not turn out to be true, consumer bees may be a side effect of checkerboarding that will need to be addressed in exchange for increased production. In this area, we have not had to limit brood volume, as is done in other parts of the country, but I'm confident we can learn how and when.

Retrospect

If you concede that nectar encroachment on brood nest volume could be the triggering mechanism to initiate swarm preparations, several things fall into place. The management actions currently recommended for swarm prevention have the effect of providing nectar storage space.

Early supering is highly recommended. If there is not a band of capped honey between the brood nest and the added super, the super of drawn comb provides storage space. ***Note that the literature states that foundation does not seem to do the job.***

Hive body reversal is a standard swarm prevention technique. Several configurations of the brood nest, when reversed, result in overhead nectar storage space if any empty super is provided. The major swarm deterrent provided by reversal is the sandwiching of capped honey in

between two areas of brood. This honey must be moved to unite the two brood volumes. They are no longer constrained by overhead capped honey and open cell nectar does not impede brood nest expansion.

Fall Swarms

We have seen the experts grapple with the question about why fall swarms are generated. The answer is quite simple. A strong or long fall flow. The bees want to build population on the upswing of nectar availability to take advantage of that availability. The bees resist storing above the wide band of capped honey overhead that is normally present at that time of year. Incoming nectar is stored in the top edge of the brood nest. Too much incoming nectar puts pressure on the brood volume. When that pressure meets their criteria, swarm preparations are initiated.

Swarmy Years

Some years many hives want to swarm, but others they are less inclined to swarm. The build-up in either case appears to be the same. Then the answer again is quite simple. From year to year, there is great variability in nectar sources.

In the last four years, we have had two dark honey, one medium amber and one light honey season. One of the dark honey years was red. Every super in the honey house ranged from pink to dark red. These obviously different honeys are an indication of the variability in nectar sources from year to year. If we conclude that the same variations prevail during the build-up, there would be years when all colonies in the area would have excessive nectar. 1996 was such a year

in this area. The late surge in nectar availability produced a "swarmy" year. The swarm season was delayed by about a month, but nectar availability did its job when it arrived.

Queen Cup Whitening

My XYZ book says that whitening of queen cups is an indication of congestion. Sorry, XYZ, but it has nothing to do with congestion. It is an indication of surplus nectar availability. In the early build-up the bees generate no new wax. It is just one the house bees' duties forfeited in favour of field force. They choose not to have inactive bees generating wax and putting a drain on honey stores. When excess nectar is available, they allow themselves the luxury of generating some new wax. They also add new wax to storage cells above the brood nest to increase storage capacity. In a normal season here, whitening occurs with redbud bloom and is an indication of the presence of conditions for swarm preparations excess nectar for the storage space available.

Reversing Versus Checkerboarding (CB)

Reversing hive bodies helps with swarm prevention. The brood nest disturbance has the effect of limiting numbers of foragers during the build-up. A major reorganization of stores is required to get back on track with brood nest expansion. The bees do nothing internal to the hive in hurry. There is great inertia in thousands of participants embarking on a course of action as a unit. Collectively, they know what is best, but it takes time for the consensus to prevail.

After a major brood nest disturbance such as reversal, there is a confusion period when nothing happens. The bees must learn how to care for the young with misplaced stores, or make other adjustments,

just to reduce their losses. Slowly, the recovery plan emerges, but two weeks have elapsed. During this period, normal brood nest expansion activities have taken a back seat and the net result is fewer bees. Most of the workers above brood tending age are foragers during the build-up and limiting the population reduces nectar storage pressure on brood nest volume.

In contrast, checkerboarding encourages brood nest expansion and bee population, while offsetting the inclination to swarm. It is a poor contest when choosing between the two options.

If you feel you **must** reverse, minimize the impact on the bees by assuring empty cells above the upper box with solid brood, flat to what was the separation plane. This will permit them to re-establish their open cell feed band on incoming nectar without waiting for capped brood to emerge. The feed band will be in place for the next larvae cycle, and the top edge of cells will be used to recycle brood instead of building a new feed band.

Conclusions

If there is any aspect of beekeeping on which there is general agreement, it is that congestion is a primary factor in commitment to swarm. This writer believes that congestion, itself, is incidental. Honeybees like to be congested and they are at their best when crowded. Congestion, itself, is merely symptomatic of sufficient foragers to gather enough nectar to put storage space pressure on brood nest volume.

Walt ended this diary entry with what he believed was the reason CB works.

In the evolutionary development of the honeybee, the reproduction strategy hinged on the following:

1. Storing of surplus honey over and to the sides of the brood nest.
2. Building downward from the top and maintaining the brood nest below the stored honey.
3. Miserly use of the overhead capped honey, while the spring build up takes advantage of early nectar sources to support brood rearing. The build-up rate is scaled to nectar availability.
4. Most workers above brood-tending age are foragers during build-up. This maximizes the potential for incoming nectar exceeding feed requirements.
5. A point in nectar availability is reached where it must be stored in the brood nest. This triggers swarm preparations.

CB distorts this strategy by providing storage space for the surge in nectar by providing openings of storage cells in overhead capped honey. The colony is no longer restricted by the capped honey overhead.

Walter William Wright

National Beehive Queen Finder Screen

A device for isolating and finding the queen when finding the queen is essential. The Beehive Queen Finder Screen has been designed to fit a standard wooden National beehive. Other types not available at the time of writing. I discovered this device when trawling through a beekeeping equipment supplier's website. It was not easy to find. The supplier is Heather Bell Honey Bee, Rosuick Farm, Helston, TR12 6DZ, today's price is circa £30.

Quote from a HBKA member: 3 most difficult parts of beekeeping, 1) lighting the smoker, 2) keeping the smoker alight and 3) finding the queen.

How does this device work?

The device allows the beekeeper to find and trap the queen **every time**. The process is easy. This device effectively and gently sieves your worker bees through a purpose-built queen excluder (QE), built into a wooden western cedar frame. The device fits snugly on top of a standard wooden National Beehive brood box and an empty super fits on top of it. The screen design includes a clever 'offset' to allow just enough space at the front of the brood box for the beekeeper to feed the emptied frames back into the bottom brood box below the screen, once all the bees have been brushed off each frame. The supplier suggests you smoke the bees down through the queen excluder screen until the queen is found. Drone bees should be easily spotted.

Instructions for Use.

1. Move the existing brood box(es) to one side onto a second floor.
2. Place an empty brood box on the existing floor.
3. Place the ***Queen Finder Screen*** onto the empty brood box.
4. Place another empty box (super) onto the Queen Finder Screen.
5. Brush the bees from a frame into the top empty box.
6. Workers will go down through the queen excluder into the bottom empty box - use a smoker to encourage them to do so.
7. Place the comb, now cleared of bees, into the bottom box.
8. Check the queen excluder for the queen.
9. Repeat for each frame until the queen is found.

When the queen is found and made safe in a cage, remove the top empty box

Rod Parker

Images of the Queen Finder Screen



Fig 1: screen top



Fig 2: screen bottom view



Fig 3:
screen on bottom BB,
showing offset space
for placing frames
thro' into the bottom



Fig 4:
Super on top of
DEVICE, view thro'
sieve of bottom BB
underneath

In the World News: Courtesy of Eileen Boden

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NOTES: