

Why Warré?

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This is a detailed reply to Glyn Davies' article 'Why I Worry About the Warré [Hive]' in *Beekeeping* (79(7) 171-174, Aug 2010), the journal of the Devon Beekeepers Association. He edits the journal, has many years experience of beekeeping and was on the executive of the British Beekeepers Association (BBKA) – for three years as its Chairman and for a further two years as its President until he retired in 2004.

His article raises a number of issues about the Warré hive but leaves out several aspects which show the hive in a better light. Here, I try to present the hive from a different perspective and, by drawing on important details, I hope to provide readers with the wherewithal to make a more informed judgement of the hive. A very abbreviated version of this reply is due to be published in the September 2010 issue of *Beekeeping*.

Novices

Glyn Davies' opening anecdote highlights the problem that new methodology of any kind faces when it first arrives. How are people going to learn about it when there is no support network already in place? Add to that an assortment of highly enthusiastic beginners who have not bothered or had time to read the basic documentation that is already freely available, and it will often happen that even frame beekeepers will be called upon to help. I have come across several instances of it. But sometimes even the experienced beekeeper, while rendering assistance, actually learns something.

Quilt

Davies advises adding a blanket of some kind over the crown board of frame hives in a cold spring. The People's Hive (Warré hive)¹ has such insulation built in to its design in the form of a quilt, a 100 mm deep box filled with some natural insulation such as chaff or dry leaves. This rests on the top-bar cloth. There is no crown board. The quilt concept is not new. It is featured in the hive of Frank Cheshire, one of the founders of the BBKA. He called his quilt a 'chaff tray'.² It is left on all the year round. Its bulk of relatively hydrophilic plant fibres may give it a moisture-buffering function as well as the more obvious one of insulating. Both Dadant and Digges advised the use of quilts. These were similar in design to Warré's. The quilt concept has also featured in the books of Langstroth, Root, Quinby, Dzierzon and Doolittle.

Popularity of the Warré hive

Coming now to Davies' comments on the Warré hive per se: he asks why the Warré hive formerly failed to gain popularity, presumably meaning by comparison with frame hives. Here is Warré on one reason why:

In the village where I was born each family had its apiary. Each winter, all my childhood friends ate an abundance of delicious bread and honey, just as I did. Twenty years later, I was the only person who had beehives. In some gardens, there was an abandoned Dadant or Layens hive, empty of course. The owners had let themselves be tempted by the advertisement of some on displays at agricultural shows. They believed they would do better with these modern hives. In fact they abandoned the only hive that suited them.³

That passage is from his book *Beekeeping for All*. The clue is in the title. He wanted a hive that would reverse the decline in beekeeping, one that was economical to both make and run.

Another possible reason for frame hives eclipsing the Warré is the lure of being able easily to remove, shuffle and transfer combs in a frame hive. Machine harvesting and reusing comb is easier with frames too. A majority of beekeepers seem to want 'hives for beekeepers' rather than 'hives for bees', as Cheshire so neatly put it. Even so, comb manipulation is also possible with the Warré hive, only it calls for more skill and care from the beekeeper. And more and more beekeepers are starting to think about 'hives for bees'. Warré's book went into twelve editions. Phil Chandler has sold over 8,000

copies (5,000 print copies) of *The Barefoot Beekeeper* which is about a more natural form of beekeeping with the horizontal top-bar hive (hTBH). It is increasingly a question of looking for ways to improve bee health rather than catering for the convenience, and sometimes greed, of beekeepers.

That there is modern interest in Warré's hive is reflected in a several statistics. Even though Warré's book was not translated into English until 2007, there are already over 580 members in the English e-group. The French Warré forum and e-group together have over 830 members. One has just started in Germany and there are Warré threads in beekeeping forums in other languages. Many more 'Warréors' are not online. Gilles Denis, near St. Etienne, runs 500 Warrés.²¹ Roger Delon (1919-2007) ran 600 Warrés in the Vosges-Jura.²⁰ Scot McPherson runs 200 Warrés in the USA, and is in the process of changing over from 500 hTBHs. There are other professionals and sideliners using the People's Hive and its modifications in France and Belgium, not to mention the countless hobbyists. Articles on the Warré hive have been published worldwide in the last three years in English, French, Flemish and Spanish beekeeping journals.

Warré beekeeping economical

Davies mentions that the Warré hive is claimed to be a less expensive form of beekeeping. Warré certainly claimed that:

the People's Hive with fixed combs is an economical hive par excellence: easy to build, in any case less expensive – no frames or foundation; fewer inspections; opening the hive only once a year; 12 kg winter provisions instead of between 15 and 18 kg⁴

But he gave no cost data. Presumably he regarded it as self-evident because less material is used, construction is cheaper, it requires less labour time and has a lower incidence of disease. However, Frères & Guillaume, who published a 430 page manual on Warré beekeeping,⁵ did a cost-benefit analysis of it in comparison with their Dadants. They found that it costs about 50% more per kilo to produce honey with the frame hive and that was excluding allowing for the shorter labour time with the Warré hive.⁶ This proportionality would apply to any frame hive.

Foulbrood and the advent of frames

Both Warré and the famous German beekeeper Berlepsch noticed that foulbrood increased with the advent of frame beekeeping. Davies rightly points out that this correlation does not imply that frame hives cause foulbrood. However, he does not offer an alternative explanation for the correlation. Yet Warré's observation harmonises with the repeated finding that foulbrood has a higher frequency of incidence in frame hive colonies compared with feral/wild colonies.⁷ A Warré colony more closely resembles a feral colony than a frame hive colony.

Hygienic husbandry

Davies emphasises an important aspect of modern beekeeping, namely understanding 'the health status of a colony and associated hygienic bee husbandry'. Here, Warré, Davies and myself are unanimous. But prevention is always better than cure. Accordingly, Warré lays great emphasis on promoting healthy colonies by means of the whole design of his hive and its management. Its key health features are:

- enhanced thermological and hygrolological properties of the hive;
- near natural comb;
- no foundation (which these days contains pesticides);⁸
- minimal disruption of nest integrity;
- narrow hive format so no incidence of starvation with stores present;
- wintering on its own honey and
- not routinely feeding sugar.

A number of frame beekeepers are already applying these features, albeit in conventional boxes such as Nationals.

Traditional versus modern methods

Warré does not, in Davies' view, 'shatter the tenets of modern beekeeping'. We do not disagree. Warré practised enough of the procedures of modern beekeeping to make it difficult to categorise his way as less modern, similar to or more modern than 'modern beekeeping'. Indeed, there is even a frame version of his People's Hive,⁹ and a host of manipulations in his book that look very like modern beekeeping's manipulations. But we need to keep in mind that many of the practices of modern beekeeping, because they involve horizontal rather than vertical transmission of pathogens, actually favour disease virulence.¹⁰ Modern beekeepers must therefore devote time and resources to disease control after the event. However, although they run the risk of seeing their expensive frames and foundation go up in flames, they can spread the cost to other beekeepers by taking out bee disease insurance.

Nadiring versus supering

Davies contrasts the two ways of expanding tiered hives: mostly supering with frame hives and mostly nadiring with Warré hives, arguing that supering seems natural because bees rapidly move to the top of the nest any honey put below them. They do indeed. Instinctively they want their winter stores above them. But there is a further aspect of supering that Davies does not mention. Supering creates space above the brood nest that is empty of honey. This is abhorrent to the bees. If nectar is available they fill it as fast as they can. They will go on filling it far beyond their needs for one or even two winters. This places a certain amount of physiological stress on a colony to fill that space. They are driven to filling it. This is reminiscent of manoeuvres in other areas of intensive animal husbandry. Indeed, the stimulus of supering can be ratcheted up a few notches by 'chequerboarding' – the practice of alternating filled and empty super combs in a checkerboard pattern as viewed from the comb ends.¹¹

Nadiring is a far weaker stimulus to the bees to build comb and store honey. This would account for the lower yield of a Warré hive compared with a frame hive, both under their typical managements. Furthermore, the lower stimulus places less physiological stress on the colony. Less physiological stress in animals is normally associated with a lower incidence of disease. It is commonly noticed in organic husbandry that veterinary bills go down with de-intensification.

Honey in brood comb

In the Warré hive, honey is stored at the top of the nest and in cells formerly used for brood. Davies points out that the brood comb might have contained foulbrood spores and concludes from this that using the Warré hive is inherently not good practice. However, as both the pathogens of both foulbroods are found in honeys,^{12, 13} frame beekeeping's practice of storing honey in supers above a queen excluder does not eliminate the problem. How the pathogens get into frame beekeepers' honey is fairly obvious. Firstly, incoming nectar is initially stored in brood comb and only later moved by house bees to the supers. Clearly the bees themselves do not realise that this is not good practice. Secondly, honey is moved about the nest by the bees and thereby transported from brood comb to supers. Thirdly there is the fact that super comb is used year after year. My former mentor in frame beekeeping showed me some combs that he had had drawn from drone foundation over 30 years ago. And finally there is the fact that, in practice, super combs are not used exclusively on the hive where they were first drawn.

In sharp contrast to this methodology, we can look at what actually happens in the Warré hive. As we have said, honey is stored at the top of a Warré. Depending on the availability of nectar, the weather and the stage in the season, the brood nest continues to grow downwards. More boxes are nadired as required. Eventually, one or more boxes of honey are harvested from the top. There is thus a constant throughput of brood comb involving a far higher renewal rate than that usually achieved in frame beekeeping. Indeed, in a normal season the management method achieves the same as a Bailey comb

change, two or more if the nectar flow permits. As harvesting the honey is generally by draining or pressing and the wax subsequently rendered, any pathogens that may be present are completely removed. Furthermore, the queens are constantly moving to lay on fresh comb, which is in fact their preference.¹⁴ This management method could be regarded as the cornerstone of the hygienic husbandry that is inherent in Warré beekeeping.

Infrequent intrusion

Davies states that 'a very important Warré policy is that a hive is opened only once a year for honey harvesting'. If by 'opening' we mean letting the heat out, i.e. opening at the top, then it is hard to reconcile this statement with the fact that Warré described artificial swarming with the People's Hive, and even extracting and re-using combs. However, aside from these manipulations, he does point out that the infrequent opening of the Warré hive avoids:

- upsetting the bees;
- forcing the bees to burn more honey to restore the hive's thermology to its former state;
- involving the bees in extra effort which could predispose to disease;
- and making extra work for the beekeeper.¹⁵

Lifting boxes to insert new ones

Now to the issue of nadiring the People's Hive: Davies asks whether lifting a brood chamber or two every time a nadir box is added, easy and sensible beekeeping. The answer is 'yes' provided that it is done sensibly. Firstly, a Warré brood chamber is 300 mm x 300 mm internal footprint and has only 50% of the internal volume of a National brood chamber. So Warré boxes are relatively much lighter to manage. This makes it easier for people who lack the strength to lift the heavier hive's boxes. Secondly, there is a choice of two management options. One is to nadir all the season's boxes at the spring visit when the hive is still relatively light after the winter. The other is to nadir as the season progresses according to space requirements in the hive. If an assistant is not available then this is easily done, without dismantling the hive, by using a Gatteau lift.¹⁶

Note also that there is no routine lifting of heavy supers to inspect the brood chamber. And nadiring happens without letting the heat out of the hive, an important feature of the Warré method for maintaining colony health. The bees barely notice that a box is being nadired and smoke is rarely, if ever, used.

Varroa

Davies asks what knowledge a Warré beekeeper has of the Varroa population, brood diseases, queen quality, swarming tendency and small hive beetle (SHB) presence. Warré was publishing long before Varroa reached France. When I want to monitor mite drop I insert a mesh floor and do a 3-day count. If it is high, the option is then to treat with a thymol delivery system in the normal way. But I am running a Bond experiment,¹⁷ so I do not treat. Neither do many Warré beekeepers, as far as I am aware. The only sustainable solution to the Varroa problem is co-adaptation of bee and mite. My longest surviving Warré colonies are completing their fourth season untreated. Many natural beekeepers who already have bees that have co-adapted with Varroa have ceased to be interested in assessing the Varroa population as the mite is no longer a problem for them.

Brood disease

With the inherent hygienic features of the Warré hive, brood diseases can be expected to be far less frequent. Furthermore, brood boxes are constantly being removed, the combs rendered and the inside scorched. However, this does not mean there will never be brood disease in a Warré hive, so Warré beekeepers have a number of options for inspection. If they wish to continue with near-natural comb they will need to remove the combs with a top-bar comb cutter,¹⁸ and preferably place them on a comb holder.¹⁹ If they want frequently to remove combs, then they could use a Delon frame,²⁰ which allows

the comb to fix to the walls, or a Denis semi-frame.²¹ And, as already stated, there is a full frame version of the People's Hive.⁹

Queen performance

As Warré beekeeping appeals to people who prefer a more holistic approach, they are usually content with judging the queen on the overall performance of the colony. Is it foraging and bringing in pollen normally like other colonies for the time of year? Is comb development proceeding normally? There are many phenomena which help the beekeeper to read the state of a colony without opening it. For this I generally recommend reading Storch's excellent little book.²² Some Warré beekeepers prefer the Frères/Guillaume version of the hive (Warré-FG) which has a wall-to-wall window in the side of every box.⁵ After Thornes brought back a Warré-FG for someone from Apimondia 2009, a National brood box with a full width window in the side appeared in their product range.

Populating the People's Hive

Davies states that a Warré hive is most easily filled with a collected swarm. However, Warré suggested all the usual routes for getting bees.²³ One of these is an artificial swarm or package. This is probably the commonest method used amongst anglophone Warré beekeepers. A two-pound package generally suffices. This overcomes Davies' objections that one is starting from a colony with a swarming tendency – although it could be argued that a colony that cannot swarm is not worth having – or that there is no information on previous temperament or disease.

Small hive beetle

My local bee disease inspector when watching a demonstration at my Warré apiary commented that when SHB comes, it is not going to find it easy to hide in a Warré hive. Indeed, the Warré hive is reported to perform well in SHB territories in Australia and the USA.²⁴

Mandatory inspections

'What about National Bee Unit (NBU) inspections?' asks Davies. I have mentioned above how individual combs are inspected. However, given the greater care and time needed to inspect a Warré, the NBU might consider taking up the suggestion of Gillard et al. for making the screening of colonies more efficient and cost effective.²⁵ It requires taking a sample of bees from the edge of the brood combs or the honey combs – not from the entrance! – and assaying them for the pathogen. Colonies with bees having titres above a set threshold would be inspected for clinical signs.

Having Warrés next door

Davies writes that he is really beginning to worry about what the presence of even one Warré hive will mean for the good health of his colonies. Given that foulbroods are commoner in frame hives compared with ferals,⁷ and that Warré colonies are closer to ferals, as already stated, it is the Warré hive owner who should be worried about Davies' colonies, not the other way round. Indeed, in the case of Varroa, if Davies is routinely treating his colonies against the mite, he is releasing genes from his non-adapted drones into the drone congregation areas, thus undoing the work towards co-evolution of Warré beekeepers who choose not to use acaricides.

Swarm control

Davies is also worried about the reputation of beekeepers through having unmanaged and uncontrolled hives in a particular area. However this point applies just as much to frame beekeepers. All the Warré beekeepers that I know manage their colonies.²⁵ If they wish to use swarm control, the colony is easily artificially swarmed, as described by Warré himself.²⁶ I have managed Warré hives for several years. Actually losing a swarm is a relatively rare occurrence, and certainly no more frequent than with my

frame hives with a 8-9-day inspection cycle. And to judge by the number of callouts I have had this season (2010) to take swarms or extract colonies from buildings, the frame hives of my district, with the help perhaps of a few ferals, are very liberal in issuing swarms.

Modern relevance of the People's Hive

Davies goes on to make the very interesting point that the modern problems of beekeeping are very different from those faced 50 or 60 years ago and are unlikely to be solved by methods devised for the very different environmental conditions of that time. We need to keep in mind the reasons mentioned above regarding why Warré developed his hive. However, we can examine here what has changed since his time in order to test the relevance of Davies' point.

The climate has changed very little. In any case, Warré beekeeping is practised from Alaska to Sydney at altitudes from near sea level to well above 1000 metres, so climate has little relevance in this discussion. But three other factors have made a big difference to the environment for beekeeping. One is the intensification of agriculture. It means that beekeepers are now coping with extremes of nectar flow from massive monocultures, where a certain amount of supering of Warrés seems necessary to cope with the resulting artificial excess, to intensively grazed landscapes where wildflower diversity and abundance is severely eroded by mowing regimes and herbicides against dock, to the extent that Warré and frame colonies alike sometimes have difficulty in storing a surplus. Another is the widespread use of pesticides. They are responsible for massive colony losses in Europe. They turn up in honey and beeswax.⁸ The third, and perhaps most devastating, environmental change is of course the arrival of Varroa. We are probably still in the very early stages of co-evolution of the mite with *Apis mellifera*. Nevertheless, there are very encouraging reports, both anecdotal and in the scientific press, showing that it can progress quite rapidly.

All three significant environmental factors that I mentioned face both frame and Warré beekeeper, although frame beekeepers would be expected to have a higher pesticide burden through the residues in foundation made from recycled, often imported, beeswax. The first two factors are generally beyond the control of beekeepers. Unless I have missed something – Davies did not elaborate on what he meant by 'environmental conditions' – that leaves Varroa. But again the ways of coping with Varroa are no different whether you are a Warré or a frame beekeeper. As already described, one can treat or not.

To 'environmental conditions' one can legitimately add another that at first does not seem to be 'environmental', and that is the 'genetic environment'. After many decades of artificial queen breeding the genetic diversity of honey bees has been badly eroded.²⁷ But again, this is a problem which affects both Warré and frame beekeepers. Warré was very critical of artificial queen breeding.²⁸

Bee races

Davies then quotes a lengthy passage on 'Races' from *Beekeeping for All*,²⁹ and concludes that much of it is misconception. In this passage, Warré is basically recounting his own experience with the Italian bee, preferring it to the indigenous bee, but concludes that the indigenous – by which we are left to presume that he means *Apis mellifera mellifera* – could be improved if selected in the same way as the Italian bee. As the bee races issue is still raging to this day, and has so far not been resolved to the satisfaction of all parties, I do not intend to go into the various views here, especially as Davies does not explain why he thinks Warré has misconceived. My own bees are mongrels – that was made clearer by the wing morphometry I performed a few years ago. However, for reasons of sustainability, I would prefer a locally adapted, i.e. indigenous bee. After decades of importation of other racial stocks by beekeepers in my area, which may be continuing, my mongrels are having to adapt to the climate and forage of the locality as they find it.

For his quotation, Davies picked only one passage in *Beekeeping for All* that he had difficulty with. I can think of several. But to practise a more natural way of beekeeping using a Warré hive, either authentic or modified, does not mean that the user has to endorse all that Warré wrote. There are gems in the book showing that Warré was ahead of our time in a healthy approach to apiculture. But there

are procedures that more sensitive beekeepers would be uncomfortable with. This probably applies to most books on beekeeping, except perhaps the relatively recent handful of books on bee-appropriate apiculture.

Concluding remarks

Warré himself was self critical of his early beekeeping, and seemed to constantly question and refine things as he experimented over the years with 350 hives, starting out primarily from skeps, supered skeps, Dadants, Voirnots and de Layens. He predicted the problems we are seeing in bees many years ago.

It appears from the concluding paragraph of Davies' article that he believes that modern research can find an answer to the problems of keeping bees. I believe that it can indeed go a long way to helping beekeepers. Dozens if not scores of scientific papers can be adduced to show that natural beekeeping founded on the Warré and other top-bar hives accords better with bee biology and behaviour than does intensive beekeeping with frame hives. But in the end, the scientific facts alone are insufficient to bring about change. It depends on the view of the natural world of the individual beekeeper and his or her will to go *with* nature or *against* her. It's a choice between human *hubris* or following the bee.

Rather than attempting to 'shatter the tenets of modern beekeeping', as Davies characterises Warré's approach, Warré clearly states in the heading of a section of his book that the People's Hive is not a revolution in beekeeping.³⁰ Indeed, according to my researches and those of others, the principle of the hive has been published nearly a dozen times since 1677, a relatively recent pre-Warré version in the UK being Edward Bevan's hive (1827).³¹

An enjoyable feature of beekeeping is its diversity. Beekeepers have a choice of hives and methods to suit not only their pocket, but also their world outlook. Whether the beekeeper's fundamental attitude is that of dominator or steward or partner or participant,³² he/she will find a way that he/she is happy with. Beekeepers who take a more ecocentric view, one that favours hives for bees rather than for beekeepers, will find the People's Hive, and its management, amongst those hives that are the most bee-appropriate, the most bee-friendly. More anthropocentric beekeepers will prefer hives that give them far more control of the minutiae of colony processes. I am in favour of such pluralism.

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