

# Patterson's Page

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To help with learning and understanding I encourage beekeepers to do simple experiments. These often reveal that bees do not always do what is in books or taught as 'fact'. We hear the well-worn phrase: 'Bees don't read the books', and that may be because the books are not always written by people who are writing from their own observations, but instead they are just copying what others have written. Many beekeepers simply believe what they are told without question, but sometimes a simple experiment will show that what has become mainstream thinking may not always be correct. We must remember that we are dealing with biology, which can be quite variable for several reasons.

One of my common suggestions is to inspect a colony at roughly the same time each day following removal of the queen. It is surprising what you will learn, including how to tell the age of larvae and pupae. If you make notes of what happens and take photographs of the combs, you will find there can be quite wide variations in how different colonies react to the same treatment, even if they appear to be in the same condition and in the same apiary at the same time.

I have read and heard on many occasions that when a colony is made queenless, it will start its emergency cells at that time, so those that are sealed first are built on older worker larvae, resulting in poor queens. I have previously done several experiments that show this is not always the case and there are quite wide variations. I state this in some of my presentations, but tell the audience they are my findings and to check for themselves.

For my own knowledge and to provide an example for this article I repeated this experiment by de-queening four colonies in my home apiary on 22 May 2019. They were all full colonies with undesirable characteristics, so I was going to cull the queens anyway. I inspected them at about the same time every day for six days before introducing queen cells from a good colony. The total number of started emergency cells over the six days are given in the table below.

Colony	23 May	24 May	25 May	26 May	27 May	28 May
A <sup>1</sup>	0	0	2	3	5	6
B <sup>2</sup>	14	24	33	33 <sup>3</sup>	37	37 <sup>4</sup>
C <sup>2</sup>	0	2	2	2	1 <sup>5</sup>	5
D <sup>2</sup>	0	8	11	11	12	10 <sup>6</sup>

## Notes on the table

- 1 A was a swarm that came into a bait hive about six weeks earlier. This may have been a reason for the low number of emergency queen cells (Q/C) built.
- 2 B, C and D were all full colonies with 2–3 supers. All overwintered queens.
- 3 Three Q/Cs aborted, with three more built on that inspection.
- 4 One Q/C aborted, with one more built on that inspection.
- 5 One Q/C aborted, with none built on that inspection, but four on the following day.
- 6 Two Q/Cs aborted, with none built on that day.

I fully accept this is a very small sample and perhaps a larger sample may provide a wider variation, but it indicates several things that may help beekeepers in the management of their colonies. This could be a project that BKAs can undertake, but it needs to be overseen by an experienced beekeeper to maintain consistency. All frames had the bees shaken off, with combs closely inspected. I am satisfied that I counted all cells, but many beekeepers do not like shaking bees off combs, so may miss some. Some of the points I take from this are:

- After 24 hours only one colony had started cells and fourteen were started.
- Out of 65 cells started, seven were aborted, all before sealing. In all colonies the starting of emergency cells was staggered, but at different rates.

Although I did not record individual cells I considered that only three to four were started on larvae that were too old. None of them survived, so I assumed they were among those that were aborted. Even those started on the fifth day had small larvae inside. In recent years I have noticed that bees seem to 'hold back' a small number of larvae and I have had unsealed emergency cells eleven days after a queen was removed, so perhaps there is need for further experiments. Colony A was a swarm that was on entirely new comb that bees prefer to build emergency cells on, yet there were a small number of them.

When inspecting a colony in this way by shaking the bees off every comb you are smashing the colony cohesion to bits, so it could be argued the results may not reflect the correct situation. I have shown that when de-queened there is some variation in the time when emergency cells are started; the bees stagger the start and perhaps we should rethink the view that emergency cells produce poor queens.

BBKA Module 6 Honeybee Behaviour on 8 November 2014, Q6 asked: 'Approximately how long after queen loss are queen cells likely to be started?' I had already done some experiments and found that within twelve hours of being queenless some colonies had started emergency cells, yet 48 hours later others still had not started, which was confirmed by this experiment. It would be interesting to know what the 'official' answer was.

One of the myths that can be busted is that queenless colonies are always bad tempered. That is not my experience, unless the bees are normally bad tempered. Of the four colonies used for the experiment two, C and D, were being re-queened because they were a bit 'touchy'. This behaviour continued after de-queening. A and B were docile before and after de-queening.

This is an example of a simple experiment that beekeepers can do themselves. There are several other things that can be found out by removing queens from colonies, but as I have shown there is likely to be quite a wide variation in the results, so several colonies and different conditions may be needed. For these reasons it might be helpful if a beekeeper with a scientific background could write a protocol for ordinary beekeepers to perform similar experiments. It will surely help to increase our understanding of honey bees.