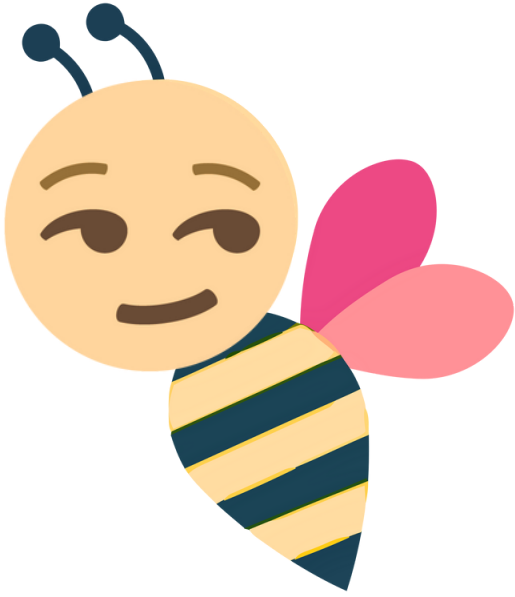
LOLA BEES ZINE VOL. XXX

THE SECRET SEX LIVES OF DRONES



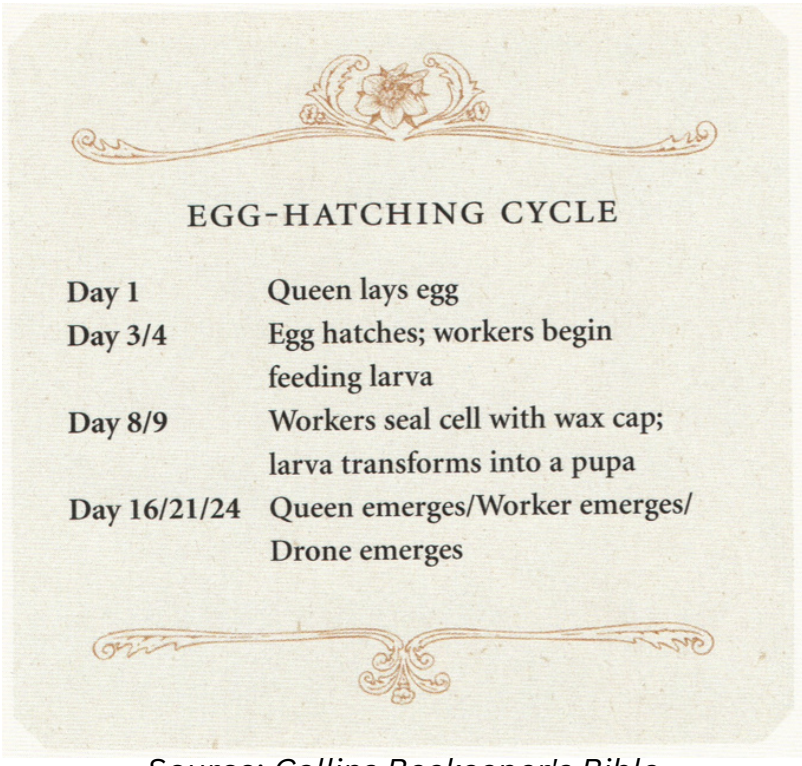
Bee education is for everyone, but when we think of educational material about bees we often think of family-friendly activities and picture books for kids that explain the importance of pollination with smiling, anthropomorphized insects. However, there are darker, more sordid aspects to the lives of honey bees that you won't find in picture books -- except for this one right here.

If you've ever wondered how bees do "it," you've picked up the right zine.

The Birth and Life of a Queen

It's difficult to describe the sex life of a drone without first saying a few words about the queen.

The queen starts out her life exactly like a worker bee: the current queen lays an egg which hatches into a larva after 3 days. All larvae are fed the highly nutritious brood food, sometimes known as 'royal jelly,' for a short period of time, but when the bees are ready to make a new queen, they continue to feed the larva with royal jelly, prompting it to develop into a queen.



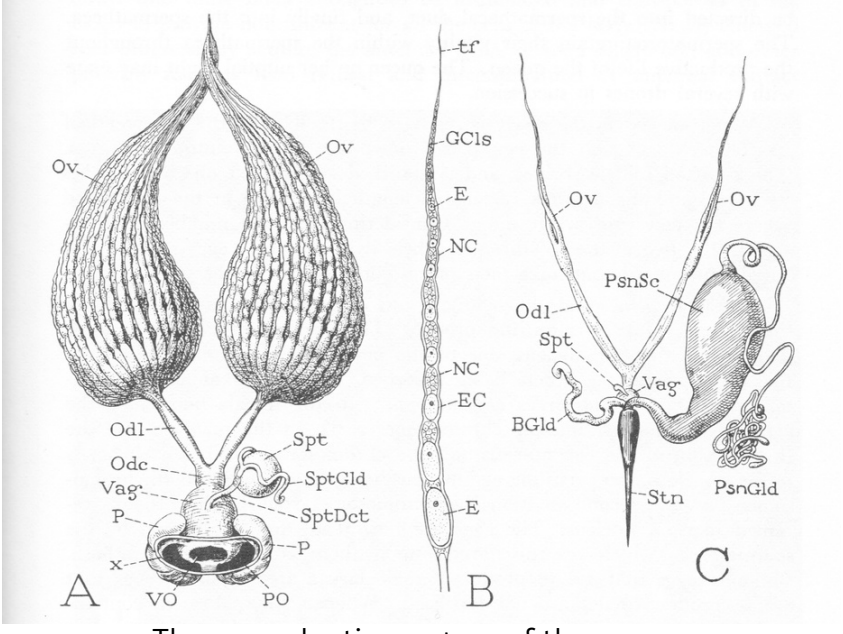
EGG-HATCHING CYCLE

Day 1	Queen lays egg
Day 3/4	Egg hatches; workers begin feeding larva
Day 8/9	Workers seal cell with wax cap; larva transforms into a pupa
Day 16/21/24	Queen emerges/Worker emerges/ Drone emerges

Source: *Collins Beekeeper's Bible*

After 5 days of feasting on royal jelly, the queen larva is sealed inside her cell where she enters her pupa stage and undergoes metamorphosis. Whereas it takes drone bees 24 days to mature from egg to adult, the queen grows super fast and is ready to emerge from her cell after only 16 days. For the next several days, the new adult queen matures inside the hive; it can take almost 2 weeks for her to be ready for her mating flight, although some queens are ready in as few as 5 days!

Once the new queen leaves the hive on her first flight, she mates with several drone bees and gathers all the genetic material she will need to lay eggs for the rest of her life. With the exception of swarming (when a hive grows too large and produces a new queen) or absconding (when something threatens the safety of the hive and all the bees must leave to find a new home) the queen never again leaves the hive. 2-5 days after her mating flight, she begins laying eggs of her own, starting the cycle over again. Queens are surprisingly long-lived, and a hive may have the same queen for several years. 3 years is the average, but some beekeepers claim they've seen hives with queens as old as 8!

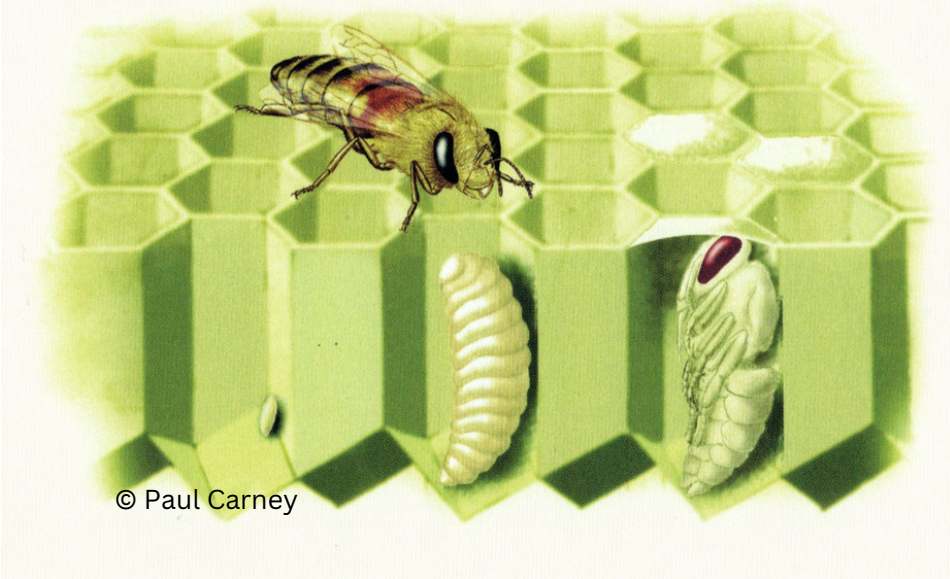


The reproductive organs of the queen
Source: Dadant's *The Hive and the Honey Bee*

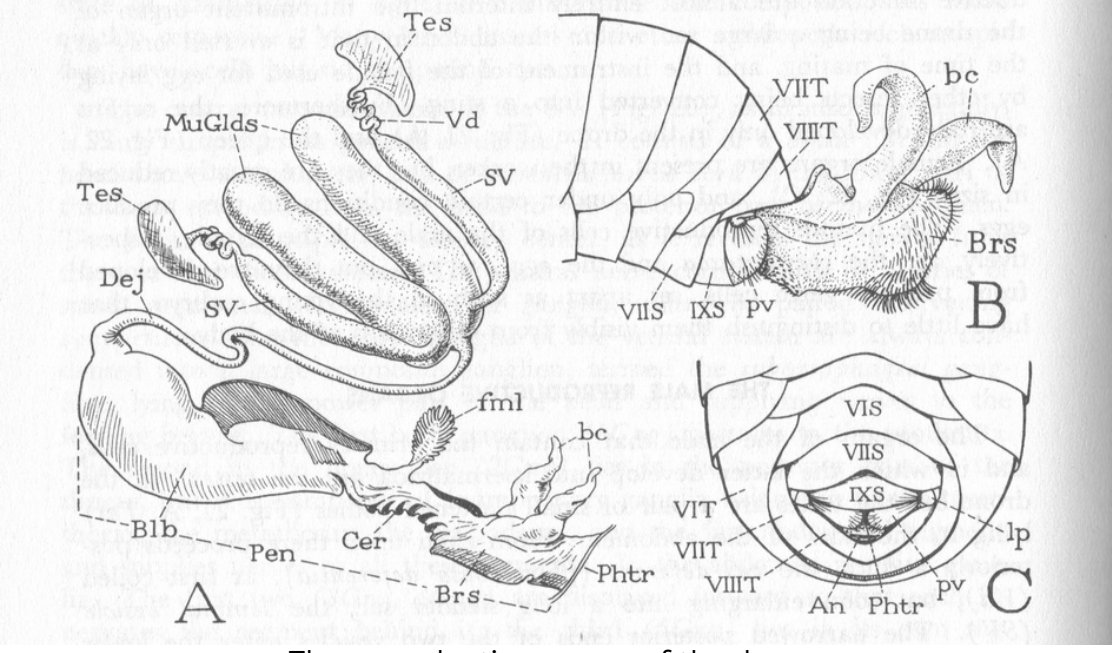
The Birth and Life of a Drone

Unlike queens and workers, drones are born from unfertilized eggs, which means that a virgin queen, or even a worker bee, is capable of producing drone brood.

Drones appear very different from worker bees: they don't have pollen baskets, they don't have stingers, and they can't secrete wax to help with comb-building. They don't forage outside the hive and are actually incapable of gathering nectar; because their tongues are much shorter than their sisters', they must receive food directly from worker bees, or feed themselves on nectar already stored in the comb. For the most part, drones do not seem to 'do' anything other than seek out a queen from another hive to mate with -- and die in the process.



Mating flights are undertaken when the drone is sexually mature at around 12 days old (a total of 36 days after the egg is first laid). These mating flights may last nearly a full hour. Many drones will often congregate in specific areas, high in the treetops, releasing pheromones that alert unmated queens to their presence. Drones are quick to find drone congregation areas and they will return to these same areas year after year, even in the absence of queens.

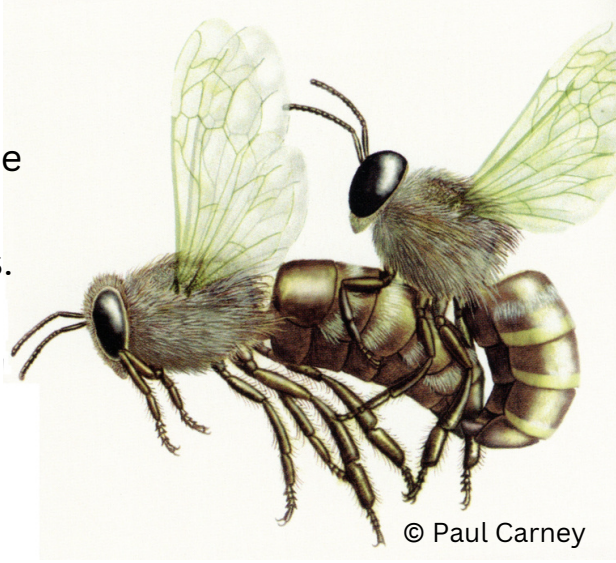


The reproductive organs of the drone
Source: Dadant's *The Hive and the Honey Bee*

The Mating Flight

Because it occurs outside the hive and high in the air, it is almost impossible to directly observe a successful mating flight. However, we understand the basic mechanics of the process thanks to the gruesome evidence that the newly mated queen has on her body when she returns to the hive.

Upon leaving the hive for her mating flight, the queen seeks out a congregation of drones. In mid-flight, a male mounts the queen, gripping her abdomen with his legs and inserting his endophallus into her sting cavity.



After insertion, the drone releases his grip and abruptly flips backward, compressing his internal organs in such a way that there is an explosive ejaculation of sperm -- and an audible snap as his endophallus breaks off inside the queen's body. Having fulfilled his genetic purpose, the castrated drone falls to the ground and promptly dies. The queen then returns to the hive with the male's endophallus still visibly protruding from her abdomen -- this is known as the 'mating sign' and is a clear indication that a new queen has had a successful mating flight. The queen will often mate with multiple males, who scoop out the previous male's genitalia before inserting their own and meeting the same deadly fate.

The Fate of Unmated Drones

Because of the whole castration and death thing, you might think that the unmated drones are the lucky ones, but that's not necessarily true. We know that the queen and worker bees live through the winter by huddling together in the hive for warmth, but what about the drones?

As the growing season draws to a close and the chill of autumn fills the air, the drones have one final humiliation to endure: their sisters stop feeding them and actively prevent them from feeding themselves from the comb. The workers then drag the half-starved drones out of the hive and leave them to die by exposure. New drone brood will be laid the following spring, and the colony doesn't plan their resources to support non-workers over the cold winter.

Surely drones do something other than have sex and die?

Well, you could argue that having sex and then dying is what life's all about for most creatures on the planet, including ourselves. But it is also true that we still know very little about the habits of honey bees and researchers are uncovering new information all the time.

The role of drones also seems less grim when you recall that a honey bee colony is a superorganism -- although it is composed of many individuals, those individuals function together as a whole, similar to how the organs in your body work together to keep you alive. In this sense, the drones are little more than flying sperm bags, but as this is crucial to the continued survival of the species, it is hard to overstate the importance of their role, no matter how sordid or even silly it might appear to human eyes. Without the genetic diversity supplied by drones, honey bee colonies simply would not be able to survive and adapt to their changing environments.

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