ARTICLE TWENTY THREE

AUSTROPLEBEIA CINCTA:
DRAMATIC FIRST PHOTOS OF THE QUEEN

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AT the centre of a stingless bee nest is the brood, where the workers build and provision miniature waxen cells, the queen lays her eggs and the immature bees are raised. Amongst the stingless bees worldwide, many different types of fascinating behaviours can be seen, if you take the time to observe these tiny bees in action.

Above: an Austroplebeia cincta queen bee attended by her workers. All photos in this article are by Anne Dollin.

Here we report for the first time, the queen's egg laying behaviour in a new Australian stingless bee species, *Austroplebeia cincta*.

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In Australia the egg laying behaviour of our *Tetragonula** stingless bees is completely different to that of our *Austroplebeia* species.

In our Australian *Tetragonula carbonaria* species, for example, worker bees build up to 90 brood cells all at the same time. When they are all fully constructed the queen comes and, within 10 to 15 minutes, she lays eggs in all the new cells in the whole batch. (See ANBRC Booklet 3: Behaviour of Australian Stingless Bees for more details.)

In contrast, in *Austroplebeia cincta*, we have observed that the process of egg laying is quite different. The brood cells are constructed individually.

Building the Cell

In this sequence of photographs you can see a brood cell being built by the worker bees:

1. The base of the cell is built.
2. A worker smooths the inside of the half built cell.
3. Two workers add wax to the edge of the half built cell.
4. The spherical cell is nearly ready to receive the provisions and the egg.

* Australian stingless bees in the genus *Trigona* have recently been renamed *Tetragonula*. *For example, the species Trigona carbonaria is now called Tetragonula carbonaria.*

Each new cell is started separately and may take about two to six hours to complete. So there are cells at all different stages of construction in different parts of the brood.

In the photograph on the left, you can see the base of a brood cell on the lower left, and an almost completed brood cell on the top right.

Two cells at different stages of construction can also be seen in the photograph below. The workers are gathering around the queen in a group, like a 'royal court'.

The queen continually patrols the brood surface, visiting all of the new cells that are being constructed.

This brood cell is now ready to be provisioned. The workers have added a short waxen neck to the top of this brood cell. Later, after the egg has been added, this material will be drawn over the top of the cell to make the cell cap.

Once a cell is prepared to her satisfaction, the queen crouches beside the cell rapidly waving her antennae.

See this fascinating process in action!

Visit the Aussie Bee website to see a
Free Video —Egg Laying
in the *Austroplebeia cincta* Stingless Bees!

Provisioning the Cell

The worker bees near the cell become very excited and they provision the cell with a special mixture of nectar and pollen. The young bee that develops in this cell will eat this nourishing food as it grows. The queen eagerly waits for the workers to finish their work.

Laying the Egg

The queen makes a final inspection of the cell. If it meets her approval, she quickly lays an egg in the cell, as shown in the photograph below.

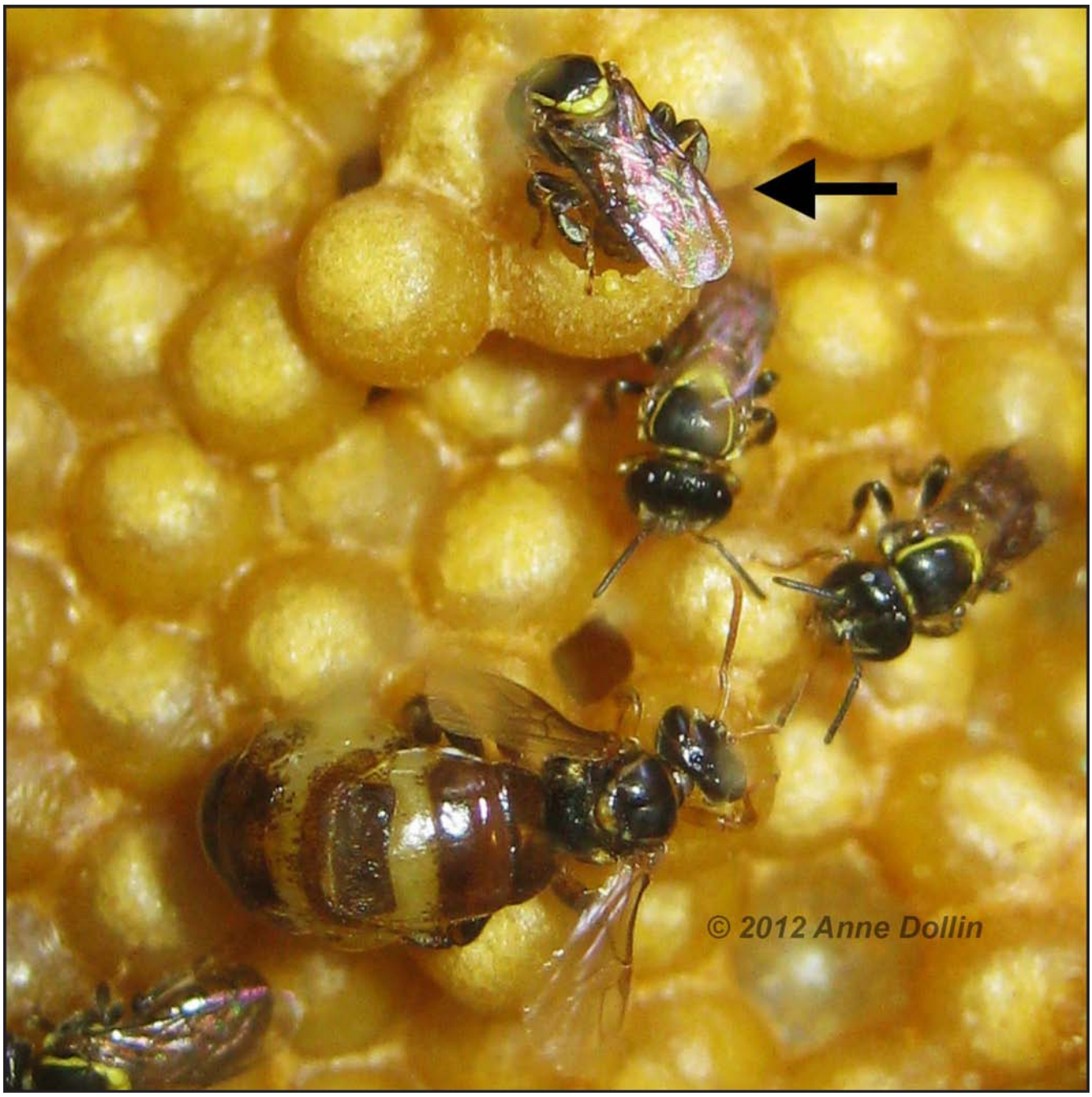
The New Egg!

The small white egg, that the queen has just laid, can be seen in the centre of this open brood cell.

Closing the Cell

A worker bee then immediately begins to seal the cell.

She inserts the tip of her abdomen into the cell neck and rotates her body round and round. As she turns, she draws the soft material of the cell neck inwards with her jaws, making a rounded cap for the cell.



For the next few minutes, several workers visit the new cell, making finishing touches to the cell cap.

A similar method of egg laying has been reported by Patricia Drumond in two other *Austroplebeia* species: *A. australis* and *A. symei*[1].

1. Drumond, P.M., Oldroyd, B.P., Dollin, A.E and Dollin, L.J. 1999. Oviposition behaviour or two Australian stingless bees, *Austroplebeia symei* Rayment and *Austroplebeia australis* Friese (Hymenoptera: Apidae: Meliponini). *Australian Journal of Entomology* 38: 234-241

Over the coming weeks, a small grub (or larva) will hatch out of the egg. It will eat the provisions in the cell and grow larger. Then it will spin a silken cocoon around itself and develop into a pupa. Finally it will develop into an adult bee and hatch from the cell. (See ANBRC Booklet 3 for more details.)

In this photograph, you can see a group of cocoons on the lower left. The queen is sitting on a honeypot that is half full of honey.

We hope you have enjoyed this close up look at the secret world inside a nest of *Austroplebeia cincta* bees! There is much more to be learned about this fascinating new species and our studies are continuing.

Read more about the nests and behaviour of the *Austroplebeia cincta* stingless bees in:
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