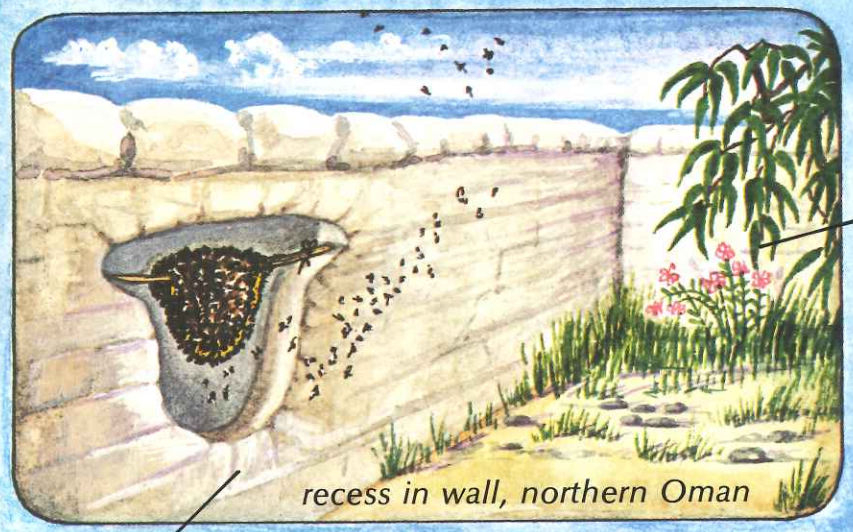
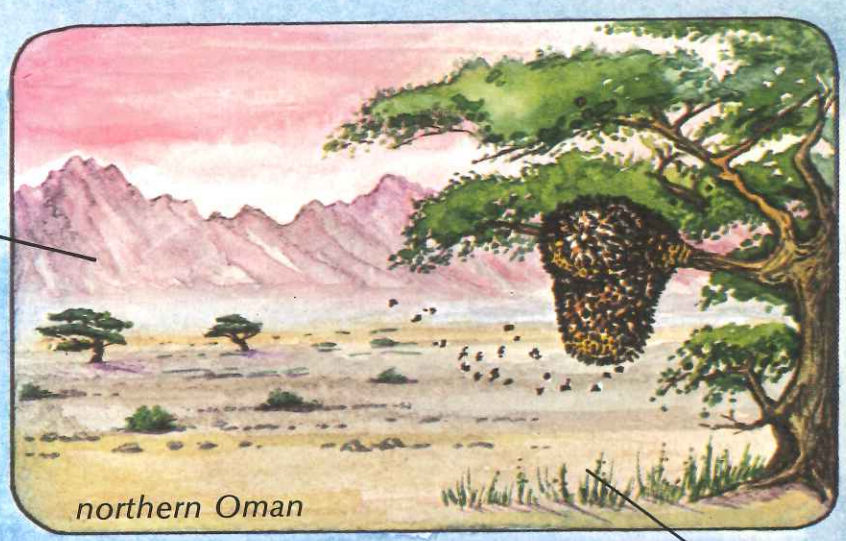
Honeybees in Oman

All honeybees live in colonies. Many colonies are wild but others are kept by man. In Oman there are two species of honeybee — one is Big and one is Little. There are some differences and many similarities in the ways of life of these two species, as you will see in the following pages.



recess in wall, northern Oman

Little Bee



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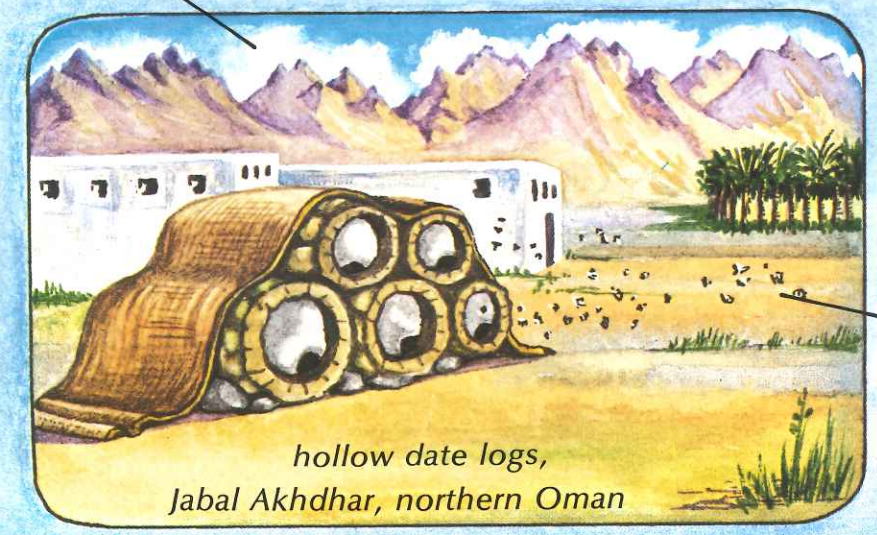
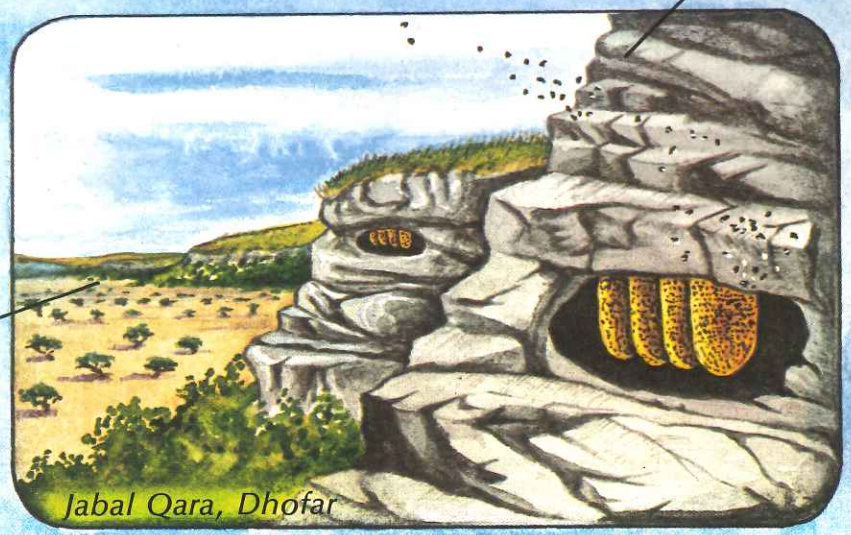
man-made shelters

wild colonies



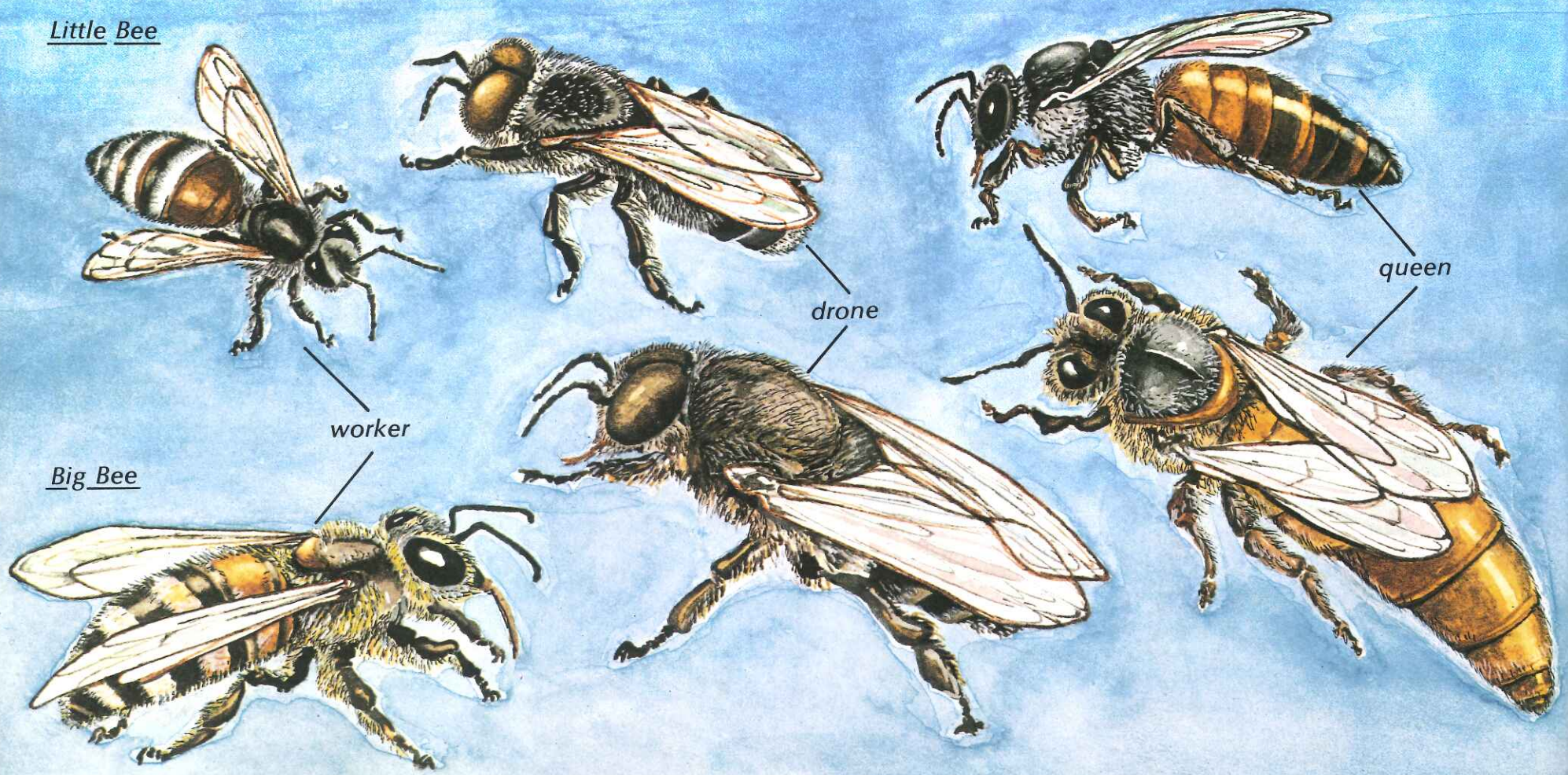
hollow date logs,
Jabal Akhdhar, northern Oman

Big Bee



Jabal Qara, Dhofar

In both Big Bee and Little Bee colonies most of the bees are workers. In addition to the workers a colony contains one queen and also, when the bees are thriving, a small number of drones (males). Neither the queen nor the drones gather their own food. Both are fed by the workers.



The sole job of the drones is to mate with new queens. This is done once at the beginning of every queen's lifetime, on her mating flight.

drone mating the queen

The queen is usually the only member of a colony that lays eggs. She does this for two or more years, laying them in the cells of the brood comb.

queen laying an egg in a cell

queen tended by workers

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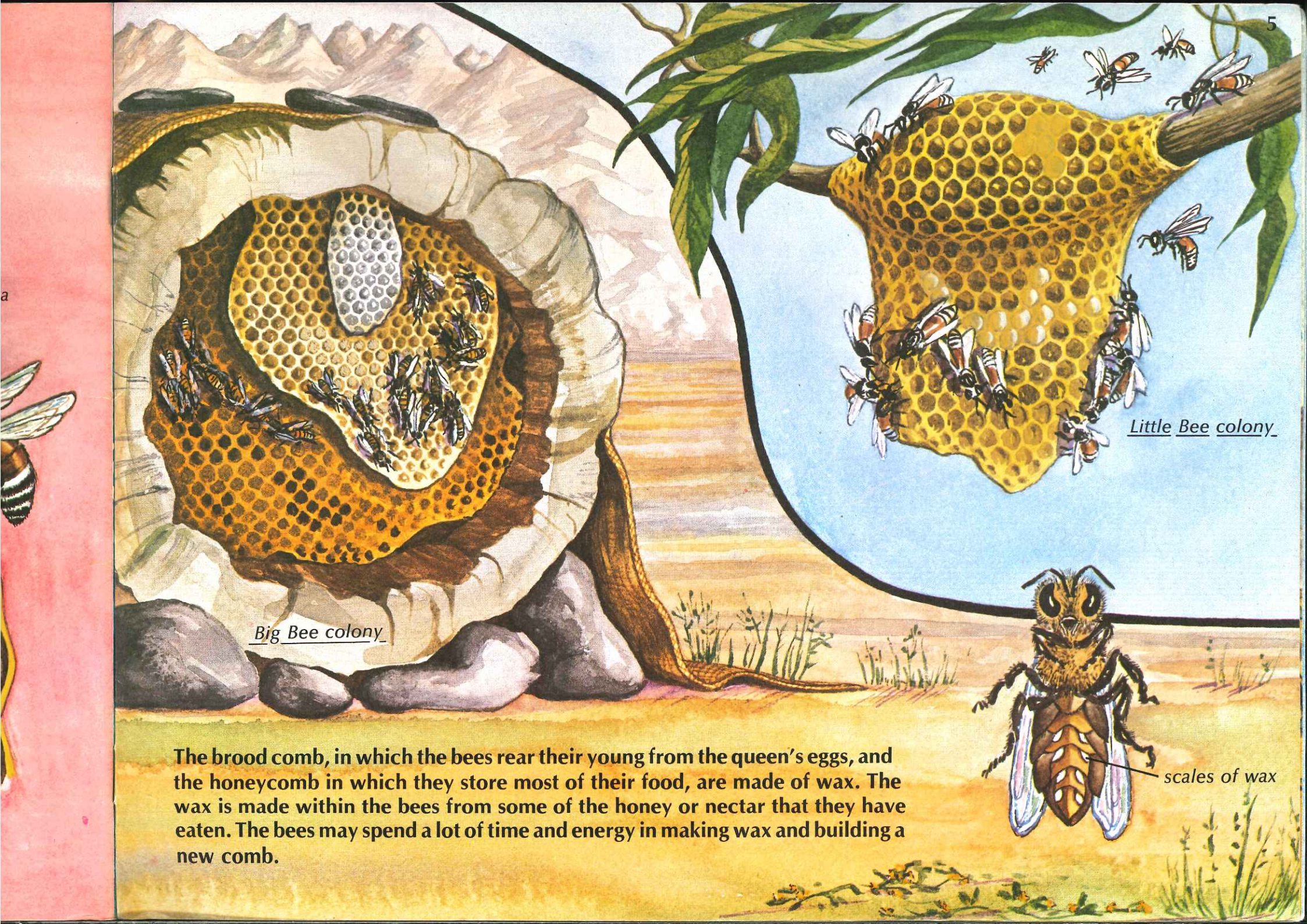
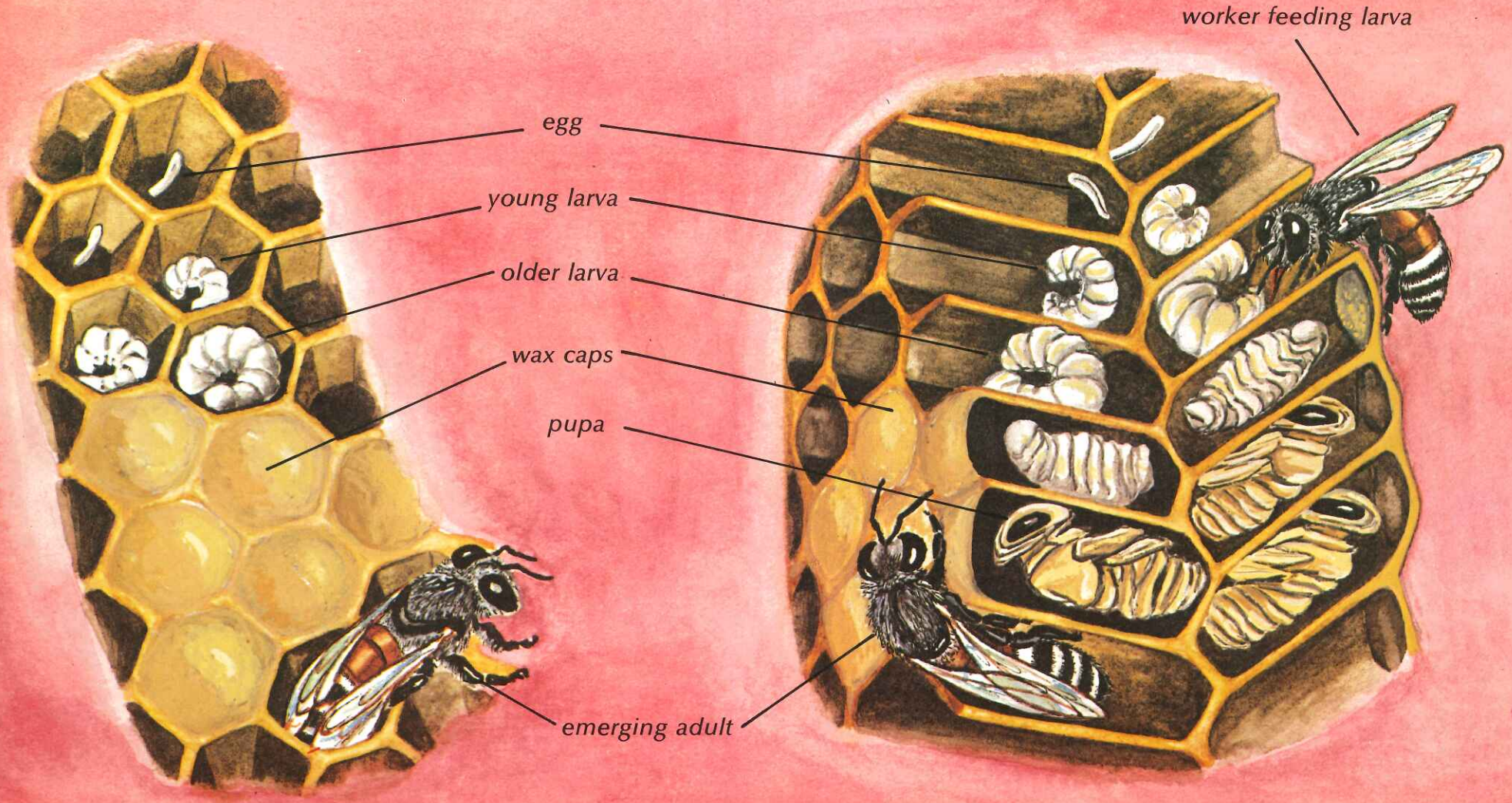


The brood comb, in which the bees rear their young from the queen's eggs, and the honeycomb in which they store most of their food, are made of wax. The wax is made within the bees from some of the honey or nectar that they have eaten. The bees may spend a lot of time and energy in making wax and building a new comb.

The eggs hatch into small larvae. These are fed by the workers and quickly grow until they nearly fill the cell. A capping of wax is put over the cell and each larva develops into a pupa, shaped like an adult but without proper wings and legs. The pupa then undergoes an amazing transformation into an adult bee — complete with wings, legs, head and hairs — which nibbles its way out of its cell. The whole process from egg to adult takes about three weeks for the workers of Big and Little Bees.



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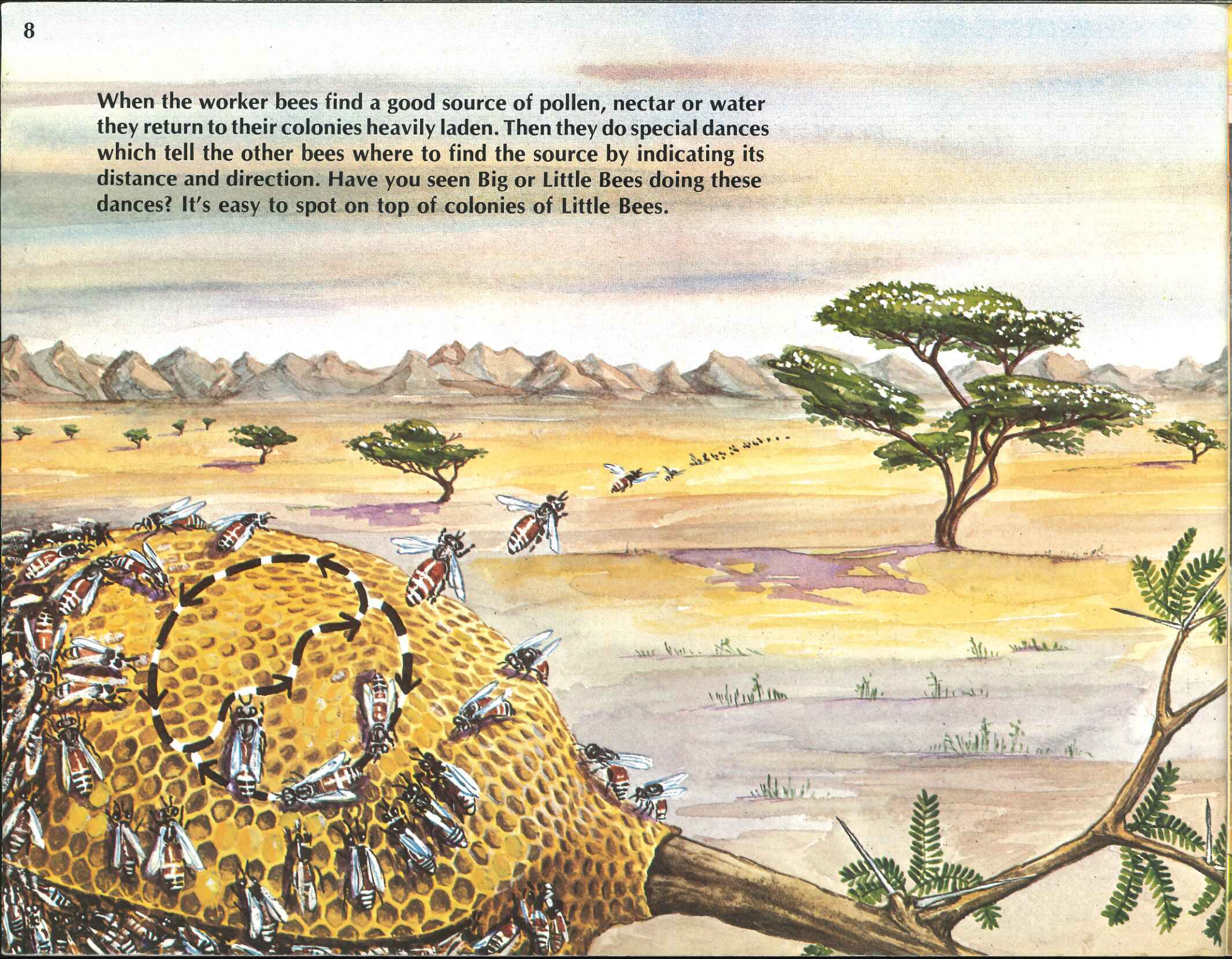
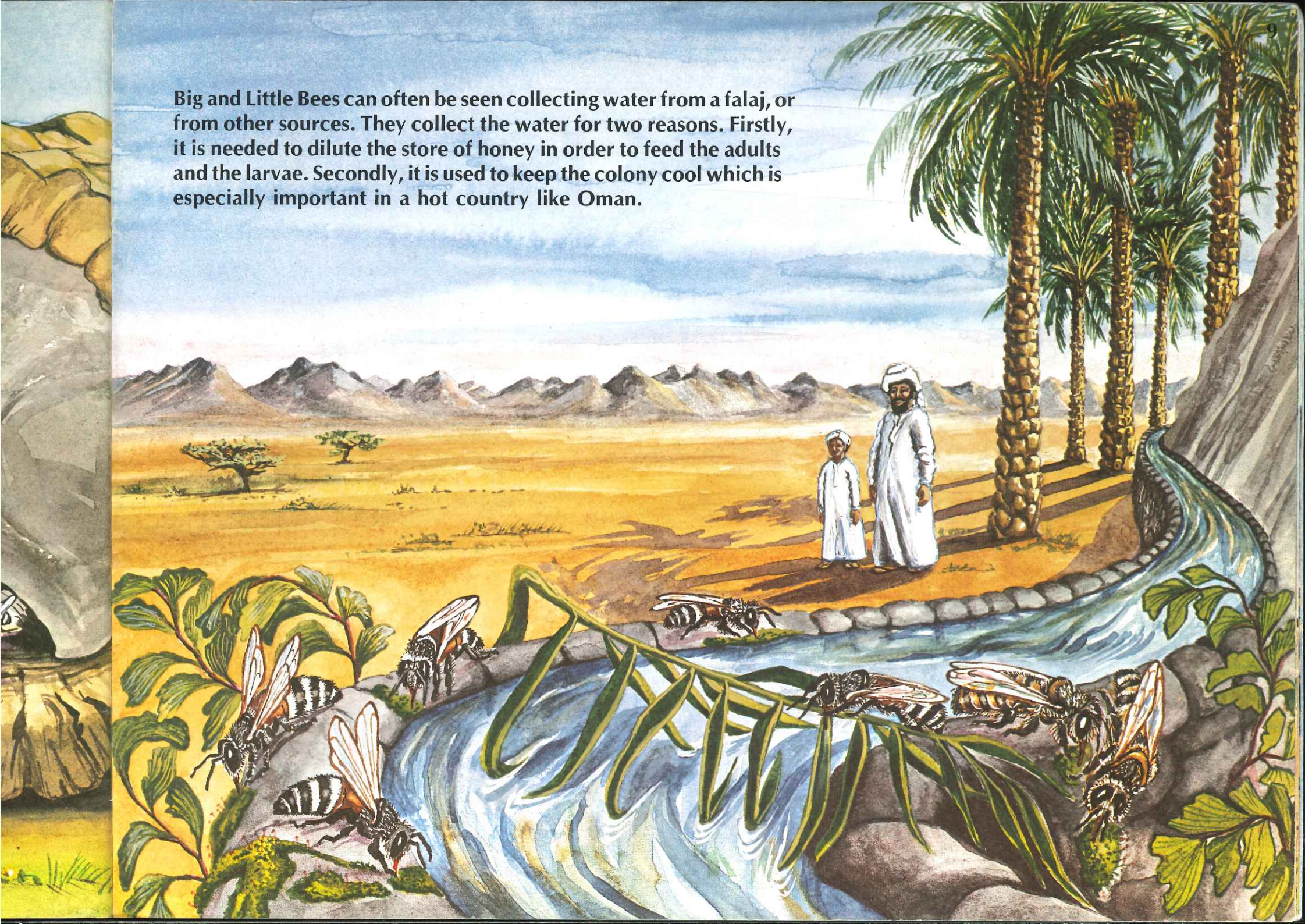
The older worker bees visit hundreds of flowers from which they may gather two types of food. Dust-like grains of pollen are packed in loads on their hind legs, and nectar is sucked into a special stomach. Both are carried back to the colony. Nectar is the special sugary liquid used for making honey.

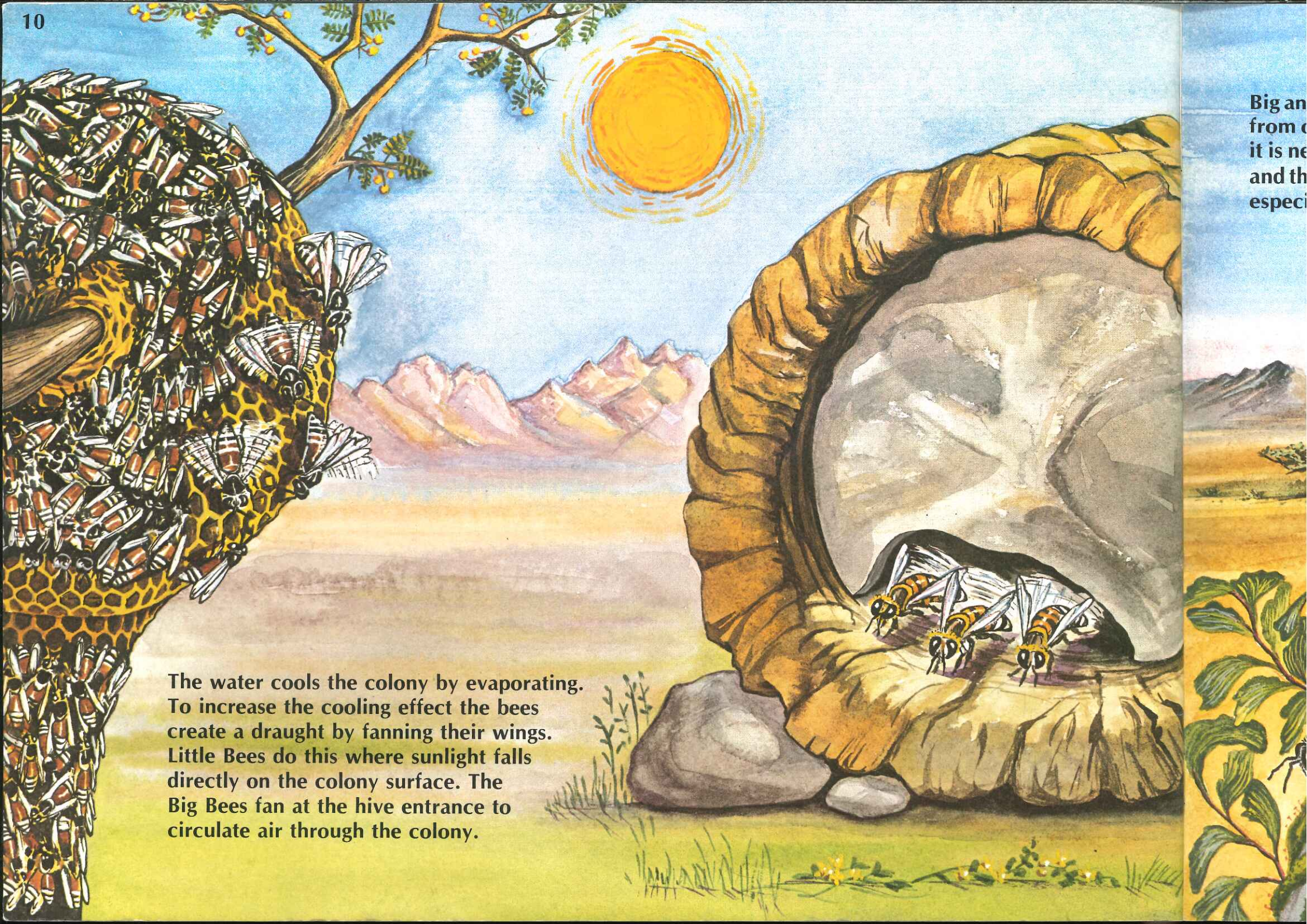
When the worker bees find a good source of pollen, nectar or water they return to their colonies heavily laden. Then they do special dances which tell the other bees where to find the source by indicating its distance and direction. Have you seen Big or Little Bees doing these dances? It's easy to spot on top of colonies of Little Bees.



Little Bee

Big and Little Bees can often be seen collecting water from a falaj, or from other sources. They collect the water for two reasons. Firstly, it is needed to dilute the store of honey in order to feed the adults and the larvae. Secondly, it is used to keep the colony cool which is especially important in a hot country like Oman.





The water cools the colony by evaporating. To increase the cooling effect the bees create a draught by fanning their wings. Little Bees do this where sunlight falls directly on the colony surface. The Big Bees fan at the hive entrance to circulate air through the colony.

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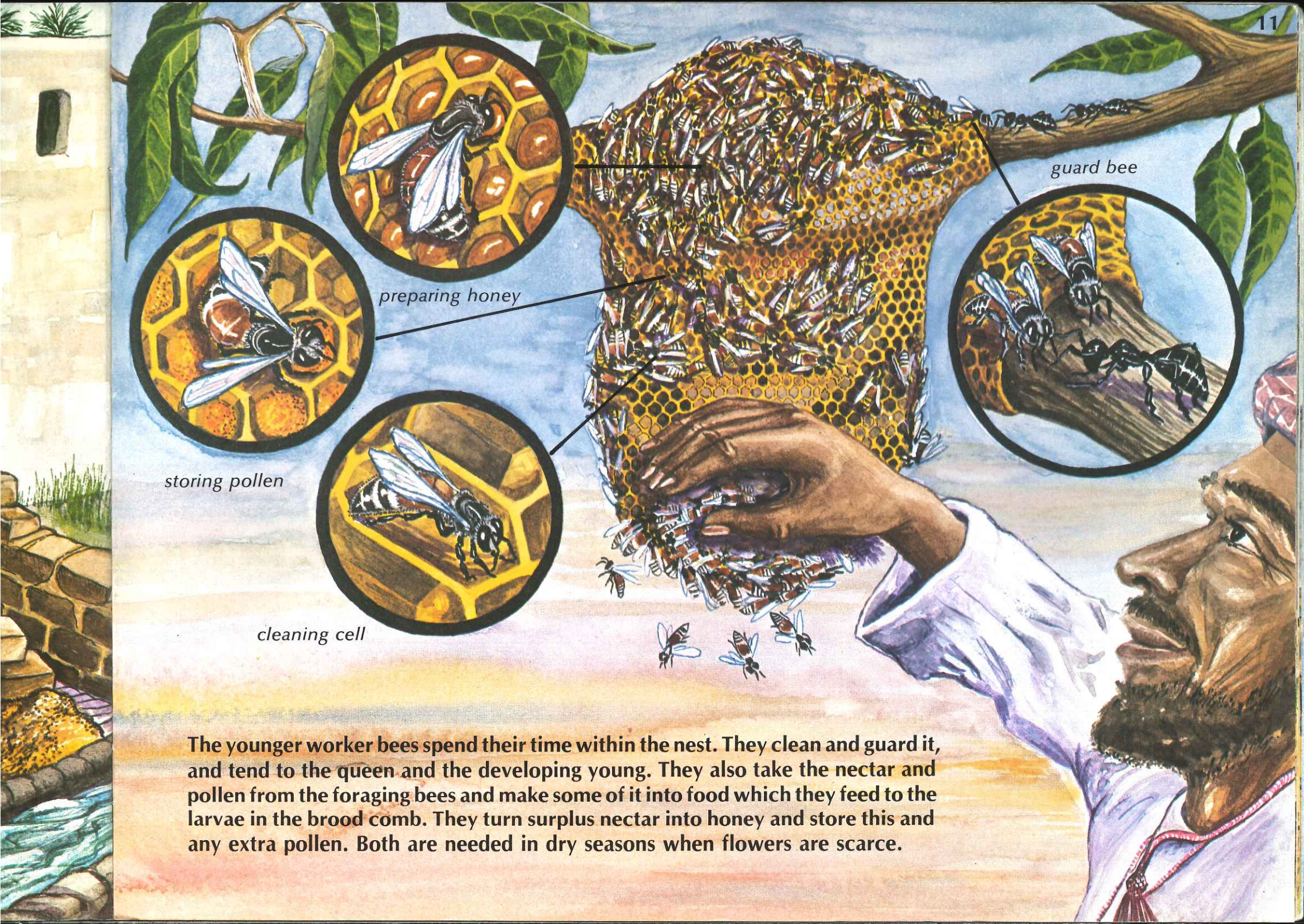
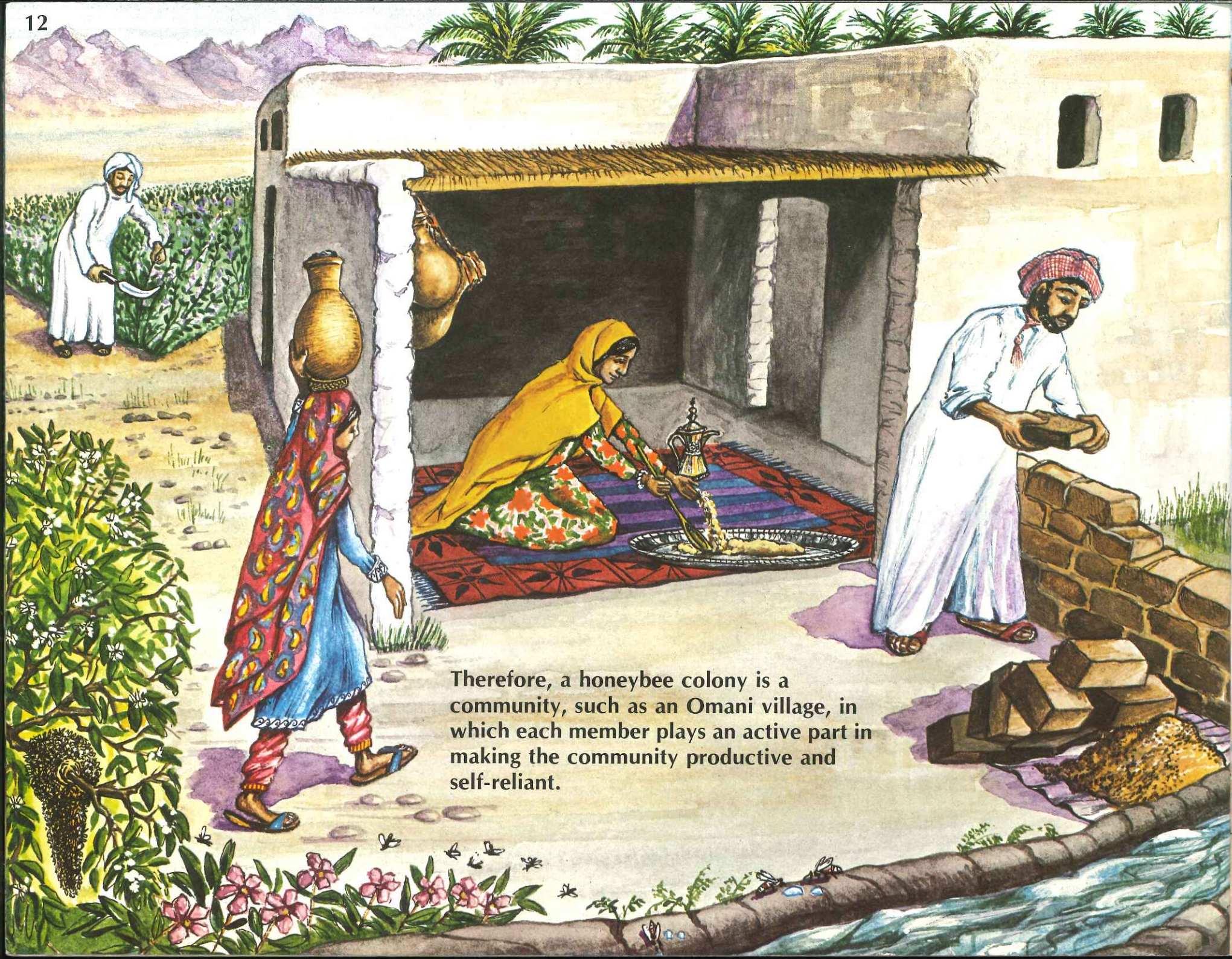


The younger worker bees spend their time within the nest. They clean and guard it, and tend to the queen and the developing young. They also take the nectar and pollen from the foraging bees and make some of it into food which they feed to the larvae in the brood comb. They turn surplus nectar into honey and store this and any extra pollen. Both are needed in dry seasons when flowers are scarce.



Therefore, a honeybee colony is a community, such as an Omani village, in which each member plays an active part in making the community productive and self-reliant.

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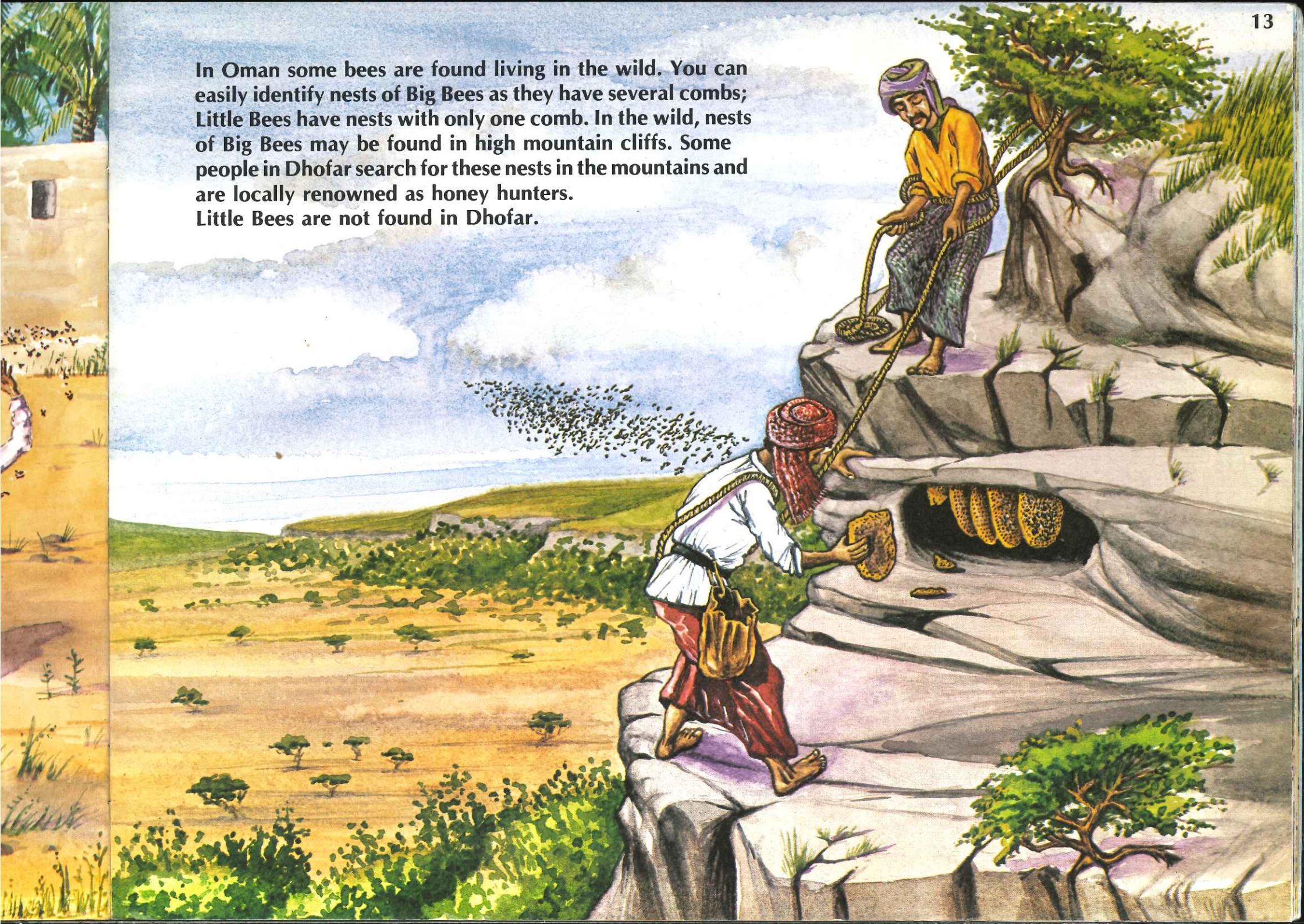
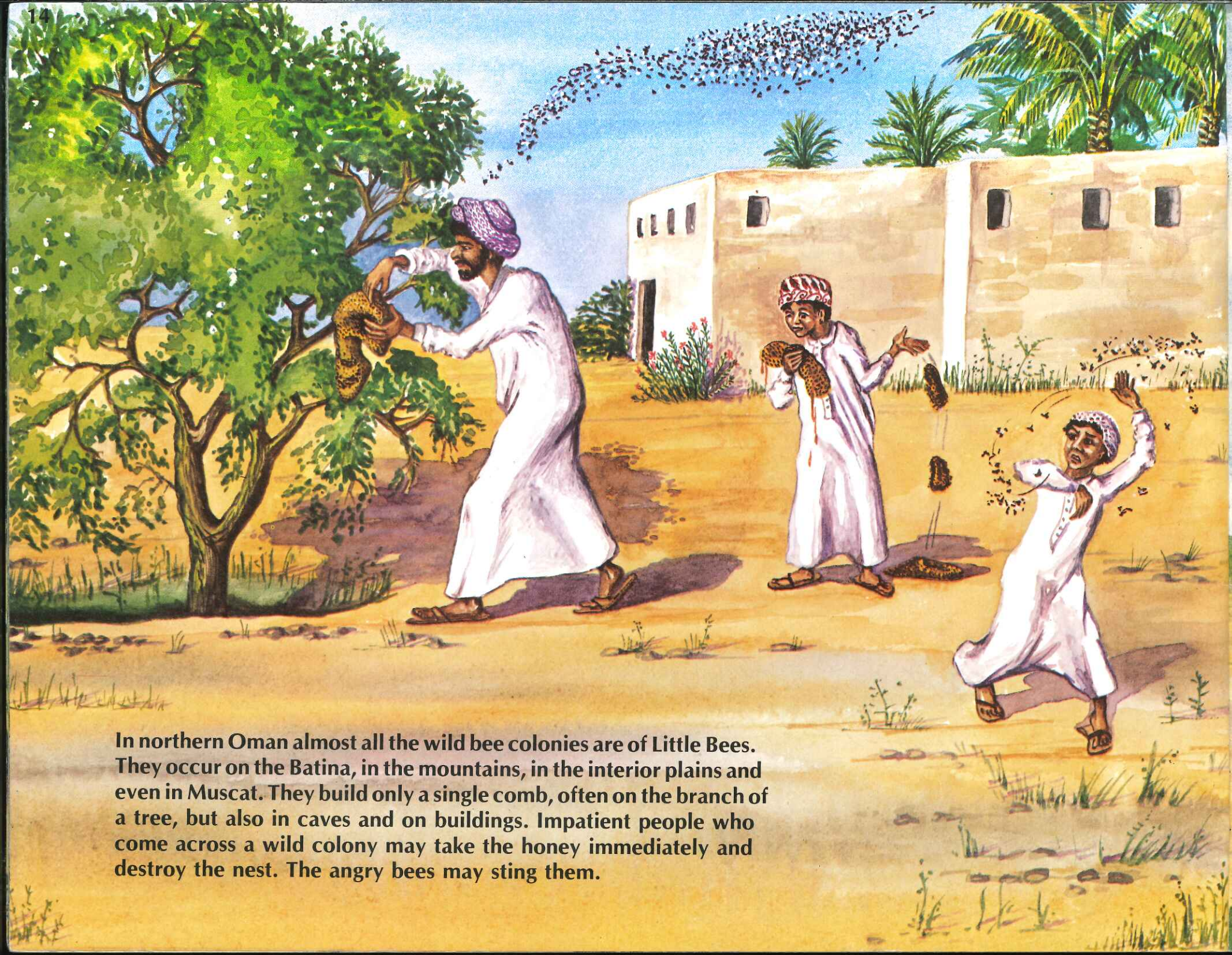
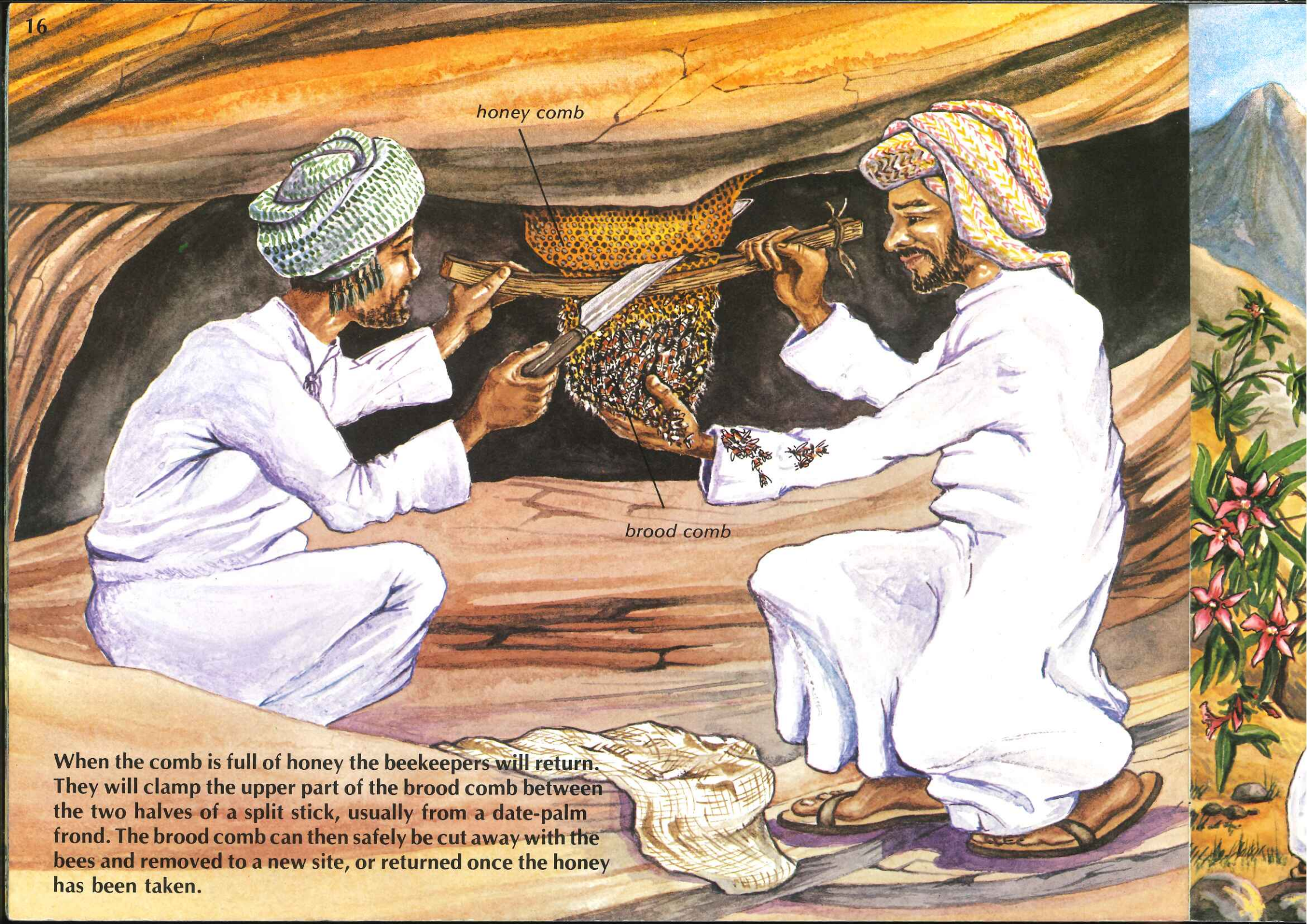


In Oman some bees are found living in the wild. You can easily identify nests of Big Bees as they have several combs; Little Bees have nests with only one comb. In the wild, nests of Big Bees may be found in high mountain cliffs. Some people in Dhofar search for these nests in the mountains and are locally renowned as honey hunters.
Little Bees are not found in Dhofar.



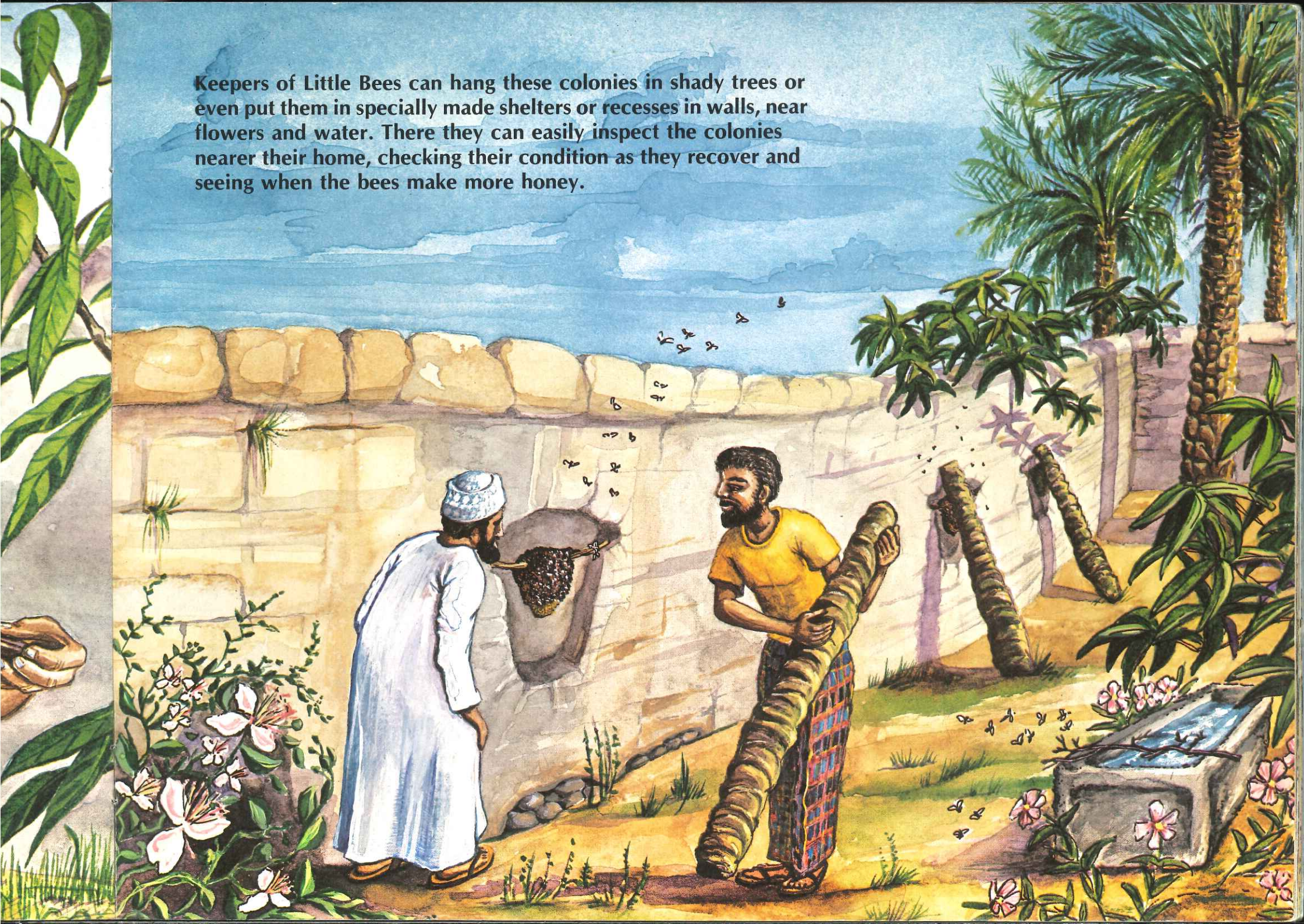
In northern Oman almost all the wild bee colonies are of Little Bees. They occur on the Batina, in the mountains, in the interior plains and even in Muscat. They build only a single comb, often on the branch of a tree, but also in caves and on buildings. Impatient people who come across a wild colony may take the honey immediately and destroy the nest. The angry bees may sting them.

However, other people who understand the value of bees search for these wild colonies and treat them carefully. They may find them by following the direction worker bees take after collecting water at a pool or falaj. If a colony they find has only a little honey they will leave a marker to claim it.

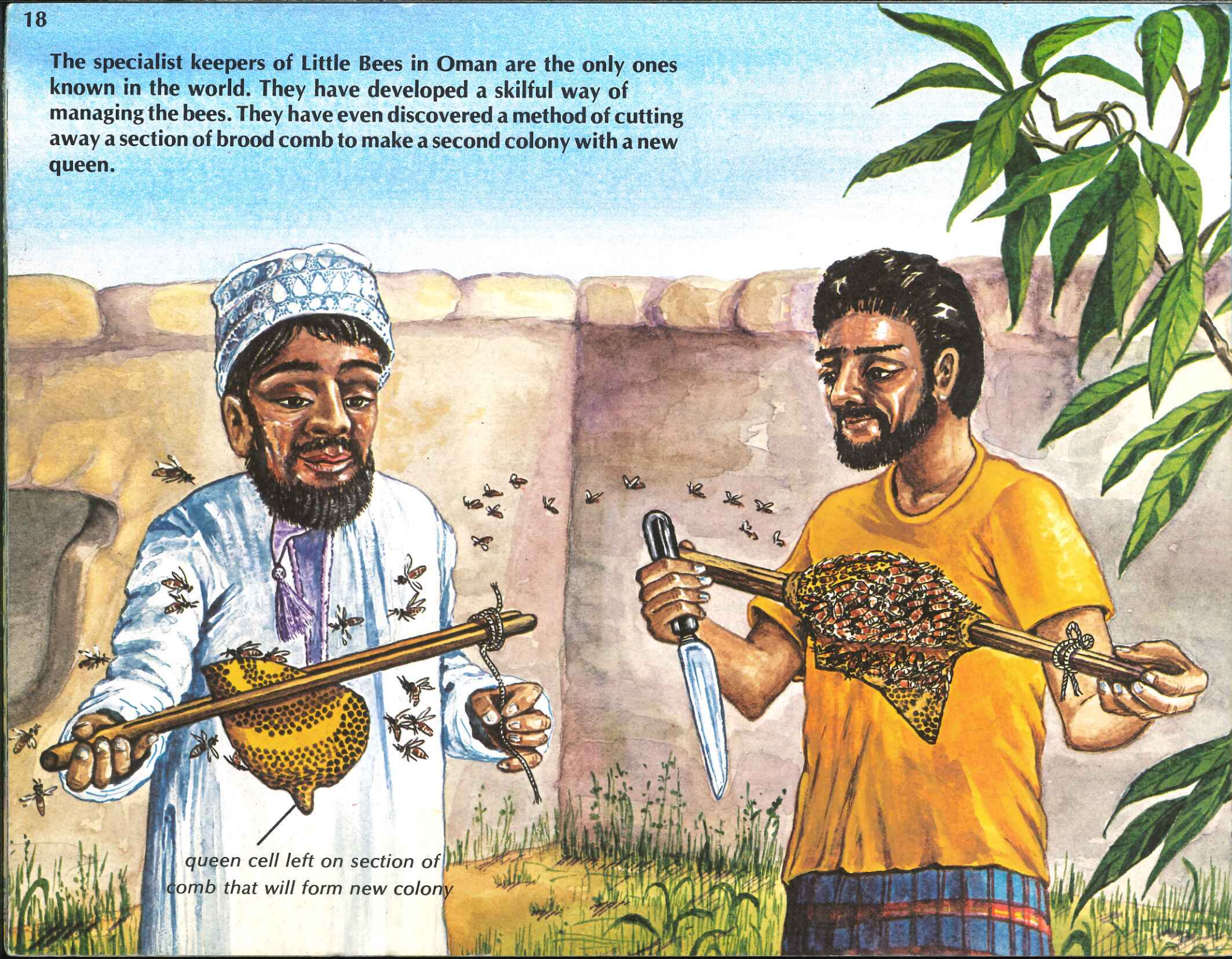


When the comb is full of honey the beekeepers will return. They will clamp the upper part of the brood comb between the two halves of a split stick, usually from a date-palm frond. The brood comb can then safely be cut away with the bees and removed to a new site, or returned once the honey has been taken.

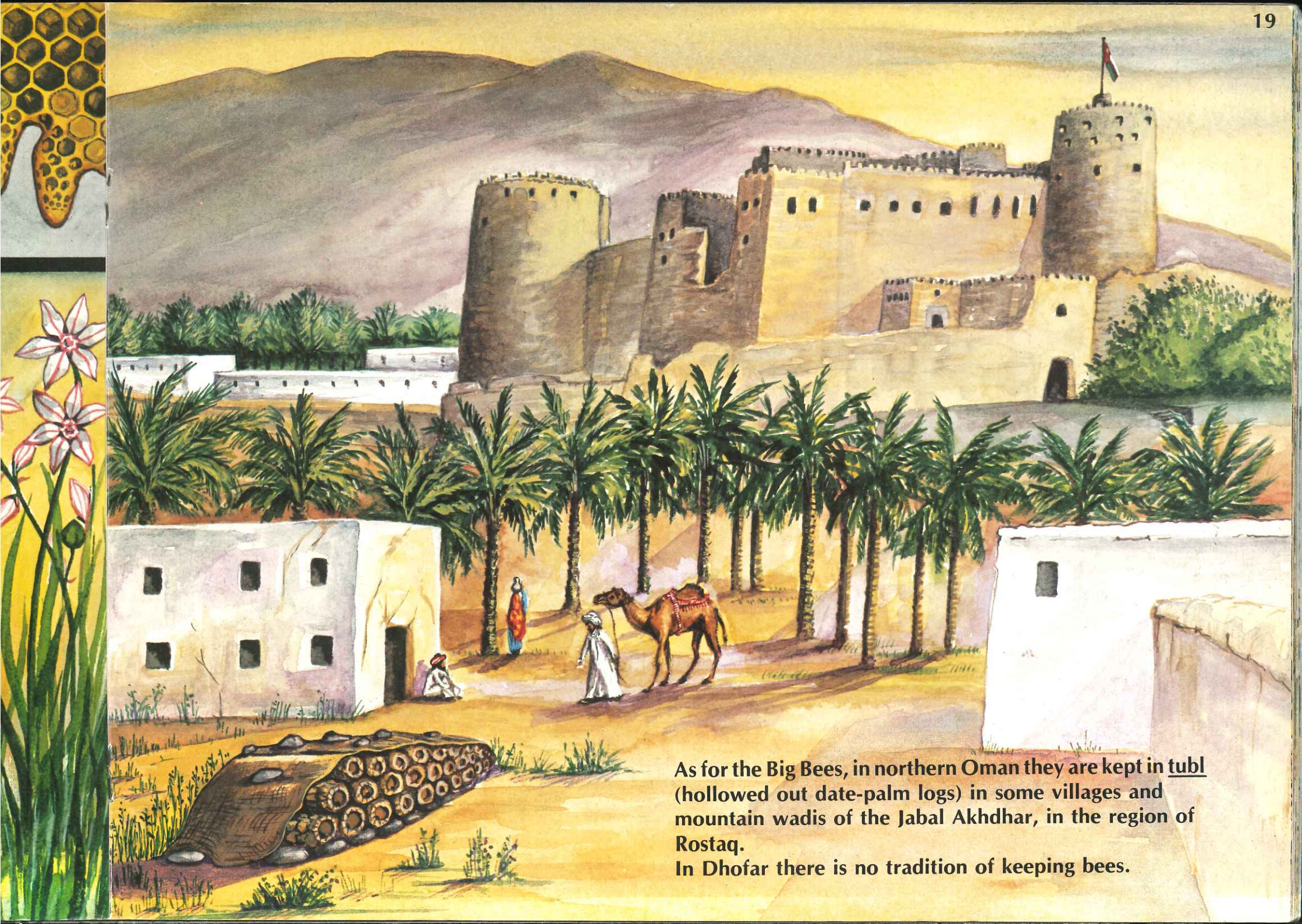
Keepers of Little Bees can hang these colonies in shady trees or even put them in specially made shelters or recesses in walls, near flowers and water. There they can easily inspect the colonies nearer their home, checking their condition as they recover and seeing when the bees make more honey.



The specialist keepers of Little Bees in Oman are the only ones known in the world. They have developed a skilful way of managing the bees. They have even discovered a method of cutting away a section of brood comb to make a second colony with a new queen.

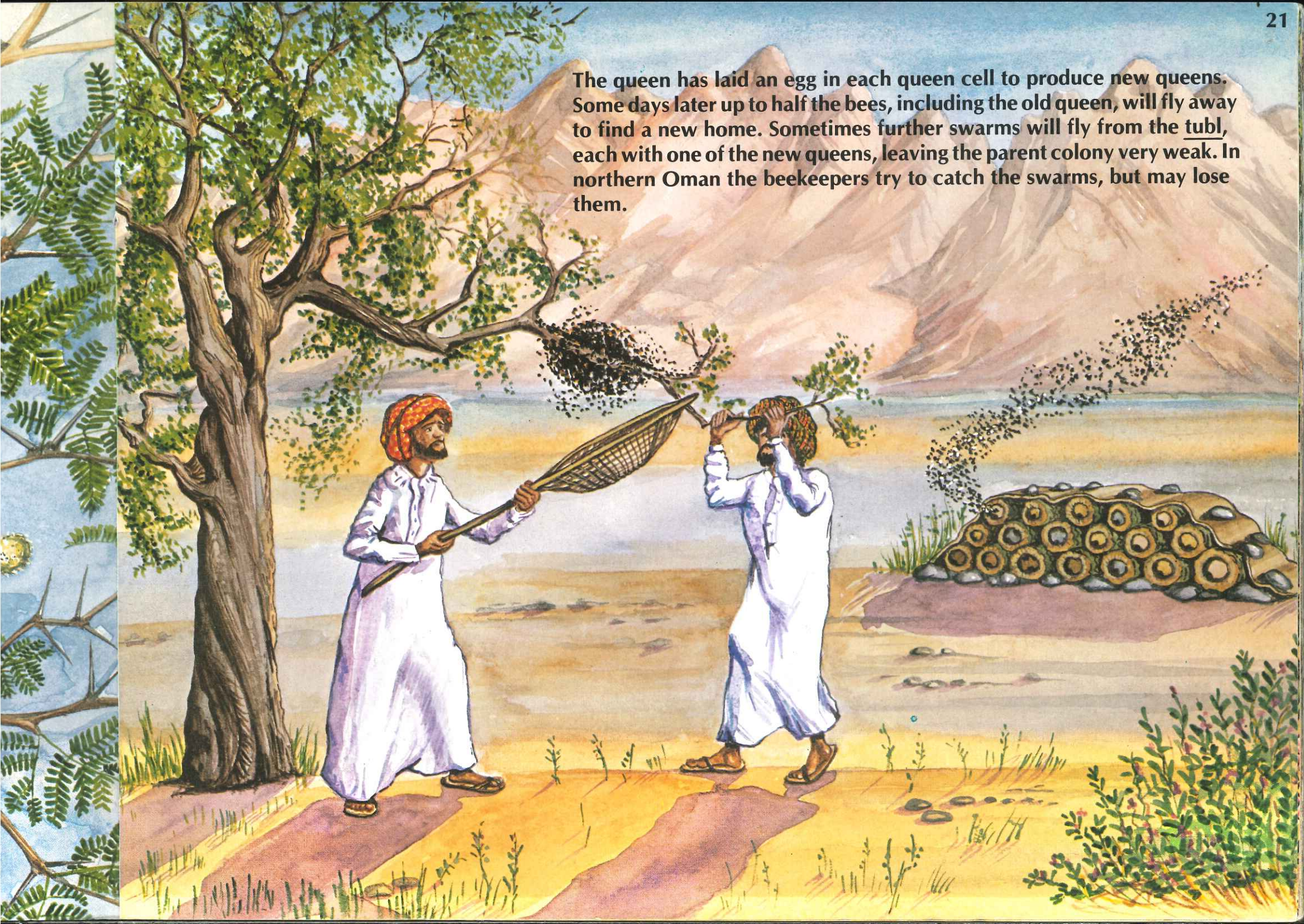


queen cell left on section of comb that will form new colony



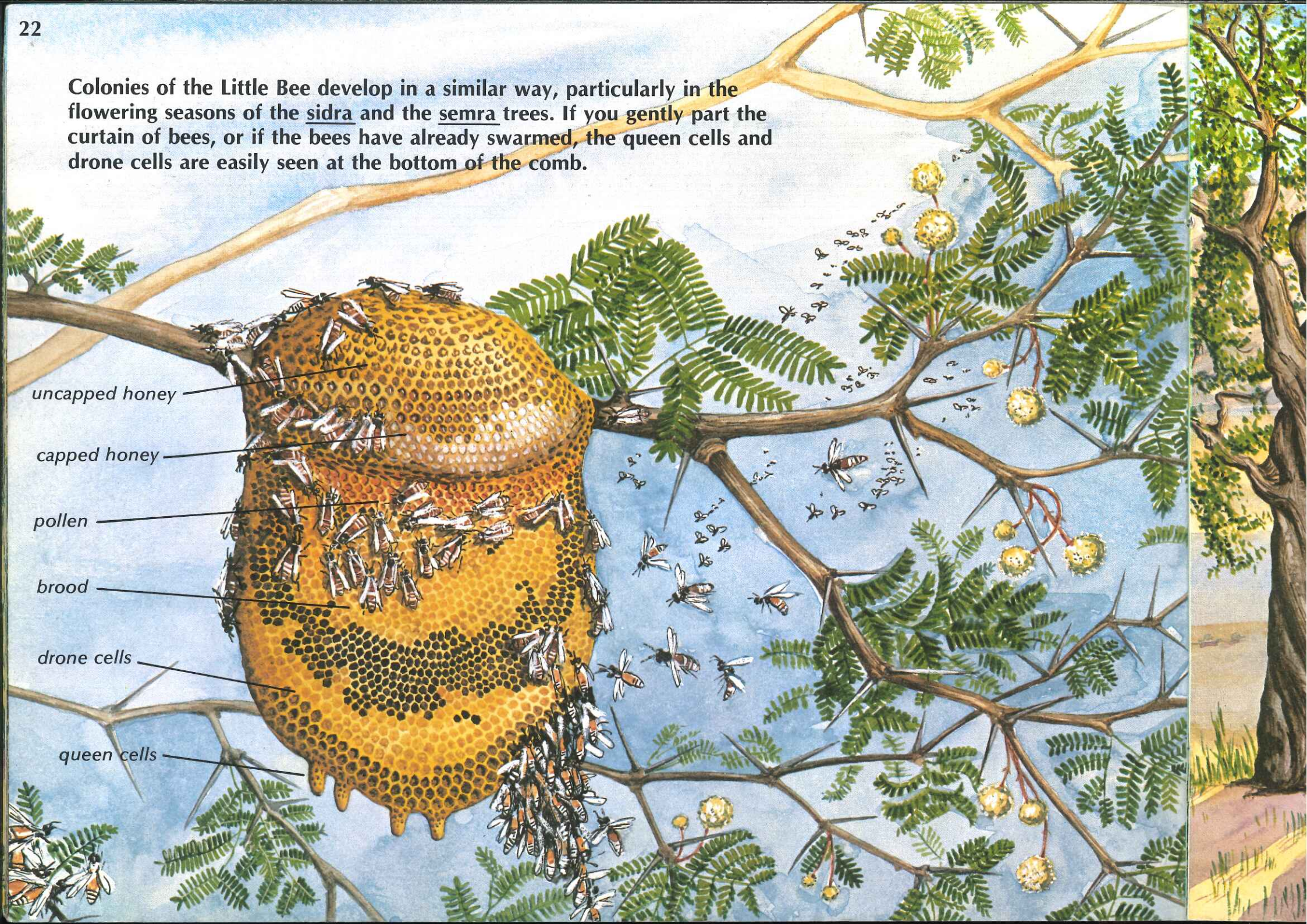
As for the Big Bees, in northern Oman they are kept in tubl (hollowed out date-palm logs) in some villages and mountain wadis of the Jabal Akhdhar, in the region of Rostaq.
In Dhofar there is no tradition of keeping bees.

After heavy rains, and when there are many flowers, the bees are active and the colonies grow strong, rapidly building new comb and storing pollen and honey. The beekeeper can see this when he opens the tubl from behind. He may also see the drones that are reared when the colony is strong. However, using a tubl, he is unlikely to see queen cells as they are usually built on the inner combs. The queen cells indicate that the colony is too large and preparing to swarm.

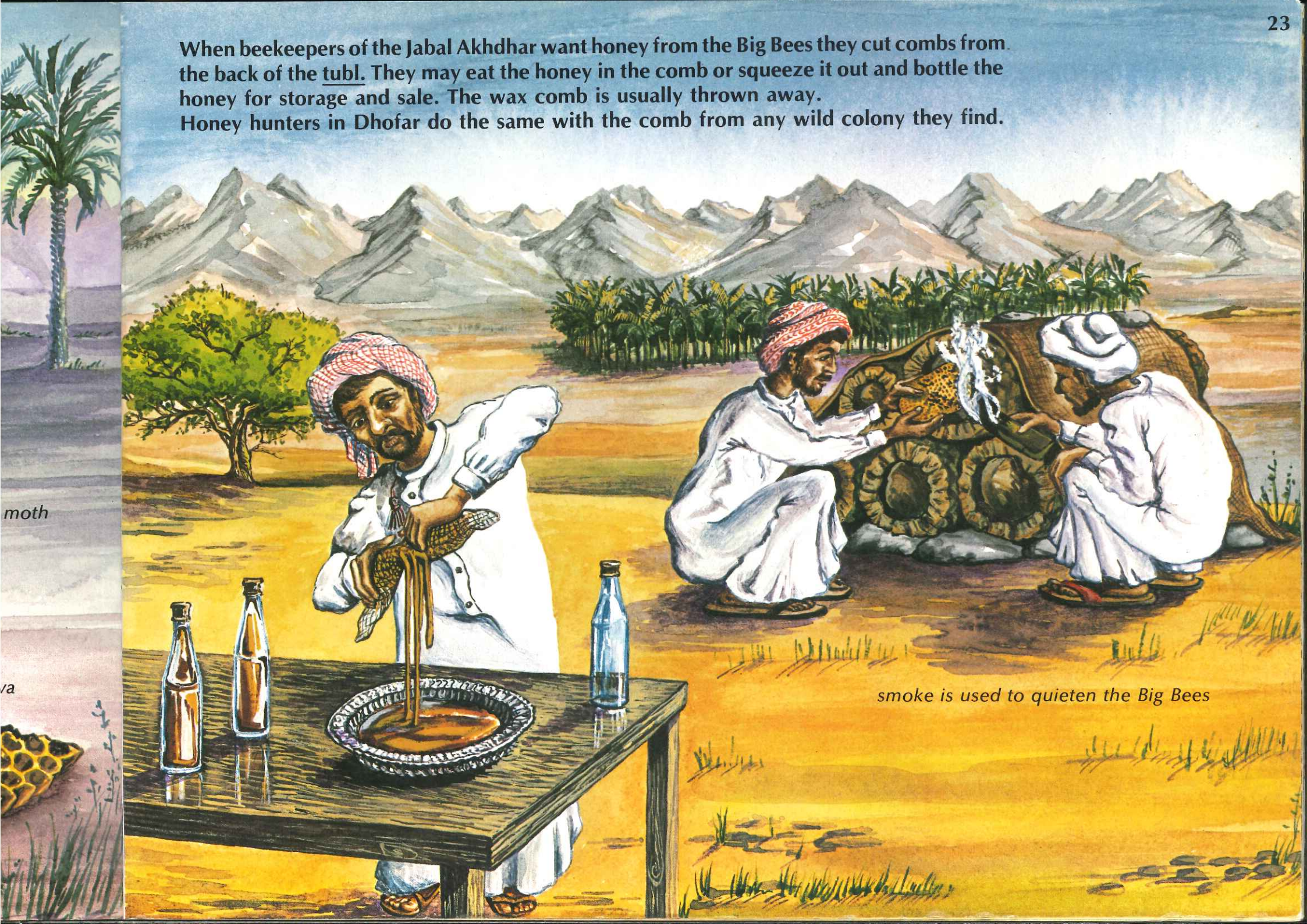


The queen has laid an egg in each queen cell to produce new queens. Some days later up to half the bees, including the old queen, will fly away to find a new home. Sometimes further swarms will fly from the tubl, each with one of the new queens, leaving the parent colony very weak. In northern Oman the beekeepers try to catch the swarms, but may lose them.

Colonies of the Little Bee develop in a similar way, particularly in the flowering seasons of the sidra and the semra trees. If you gently part the curtain of bees, or if the bees have already swarmed, the queen cells and drone cells are easily seen at the bottom of the comb.



When beekeepers of the Jabal Akhdhar want honey from the Big Bees they cut combs from the back of the tubl. They may eat the honey in the comb or squeeze it out and bottle the honey for storage and sale. The wax comb is usually thrown away.
Honey hunters in Dhofar do the same with the comb from any wild colony they find.



smoke is used to quieten the Big Bees

However, throwing wax away is wasteful. It can also endanger the other colonies of bees because of the wax moth pest. Old comb may already contain eggs laid by the wax moth. These hatch to larvae which eat the comb and then turn into moths. The adult moths then enter the weaker hives. In turn their larvae will destroy the comb and may thus kill the colonies.

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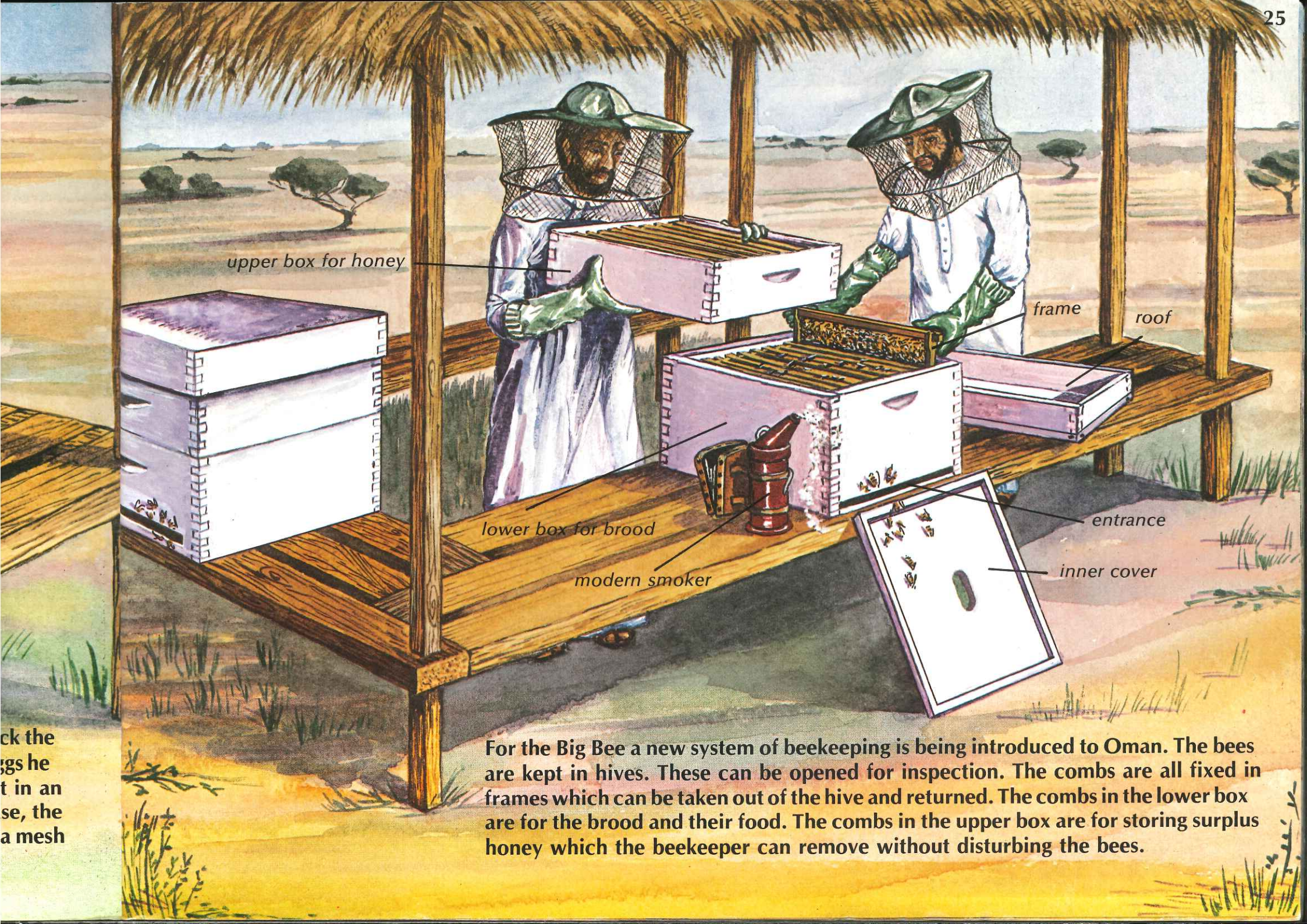

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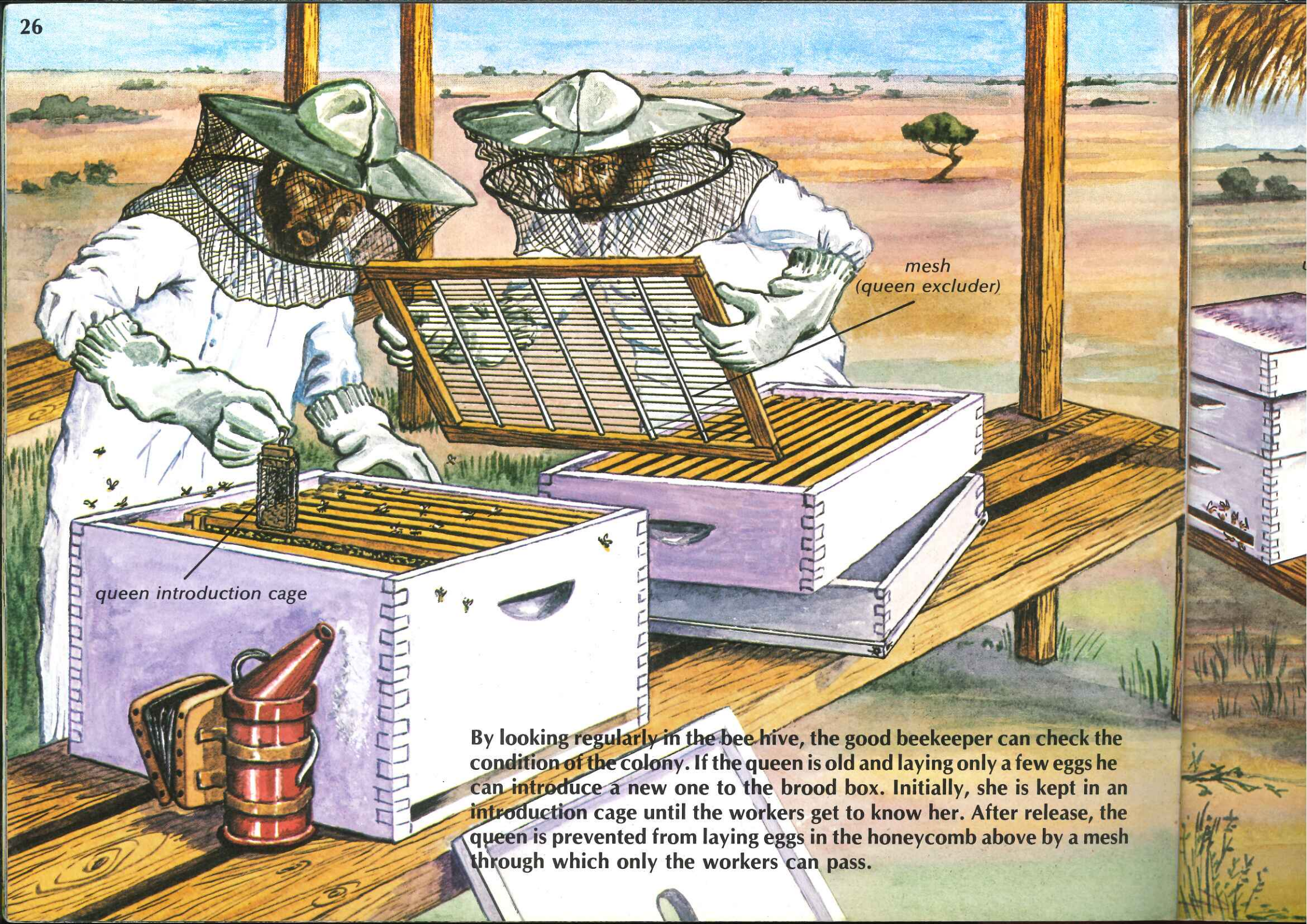
For the Big Bee a new system of beekeeping is being introduced to Oman. The bees are kept in hives. These can be opened for inspection. The combs are all fixed in frames which can be taken out of the hive and returned. The combs in the lower box are for the brood and their food. The combs in the upper box are for storing surplus honey which the beekeeper can remove without disturbing the bees.



By looking regularly in the bee hive, the good beekeeper can check the condition of the colony. If the queen is old and laying only a few eggs he can introduce a new one to the brood box. Initially, she is kept in an introduction cage until the workers get to know her. After release, the queen is prevented from laying eggs in the honeycomb above by a mesh through which only the workers can pass.

If the beekeeper sees there are no stores he can provide sugar syrup to keep the bees alive. He may also feed sugar syrup a month before a main flowering season. This helps the colony to become strong at the time when the greatest number of flowers are open. The bees will then forage actively and make honey for themselves and the beekeeper.

If the colony is very strong and rearing drones the beekeeper should look for queen cells. Their presence indicates that the colony is preparing to swarm. To prevent this the beekeeper can put half of the frames, with their bees and one or more of the queen cells, into a new hive, so increasing the number of colonies. Each hive will have a queen of its own and space for the colony to grow.

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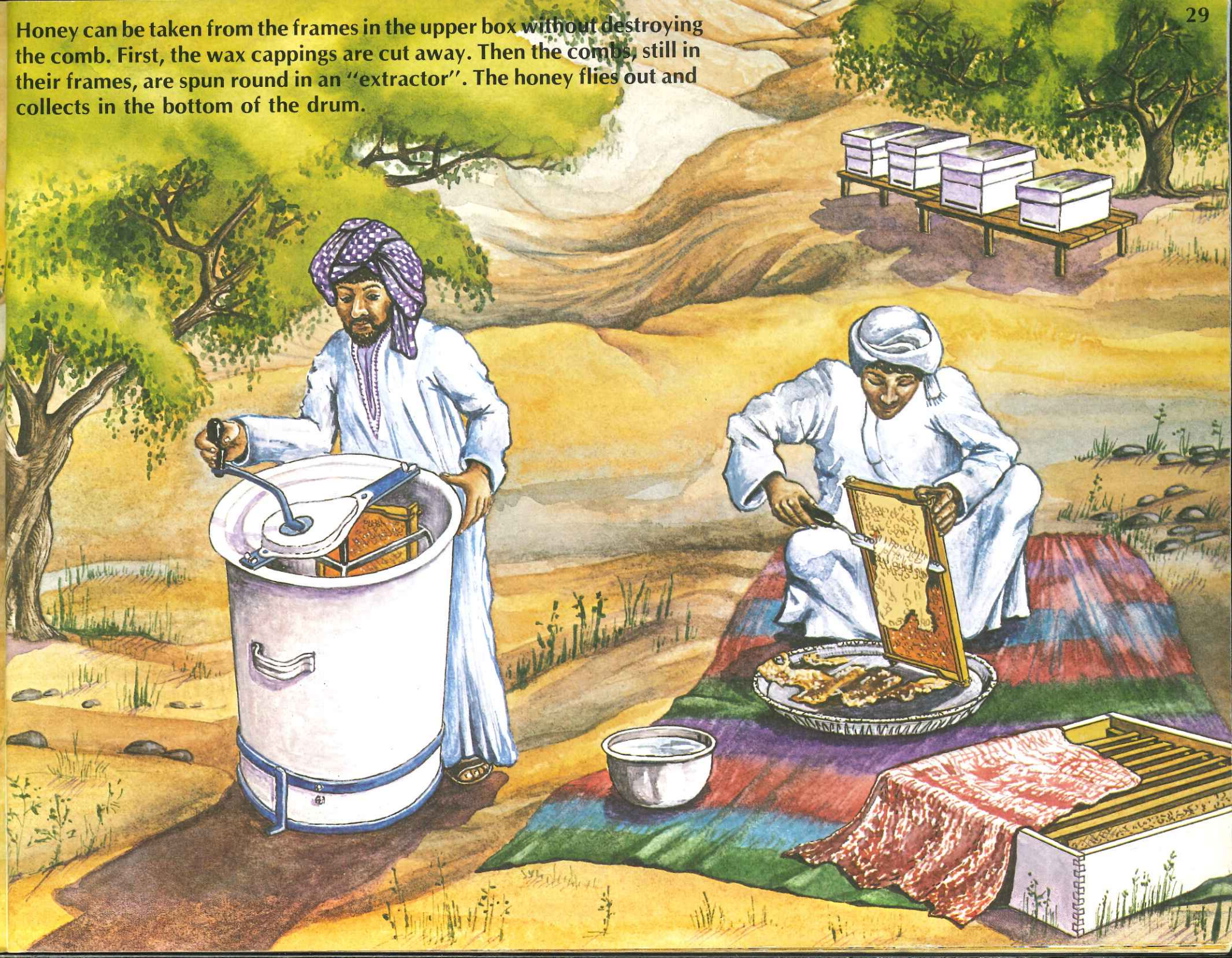
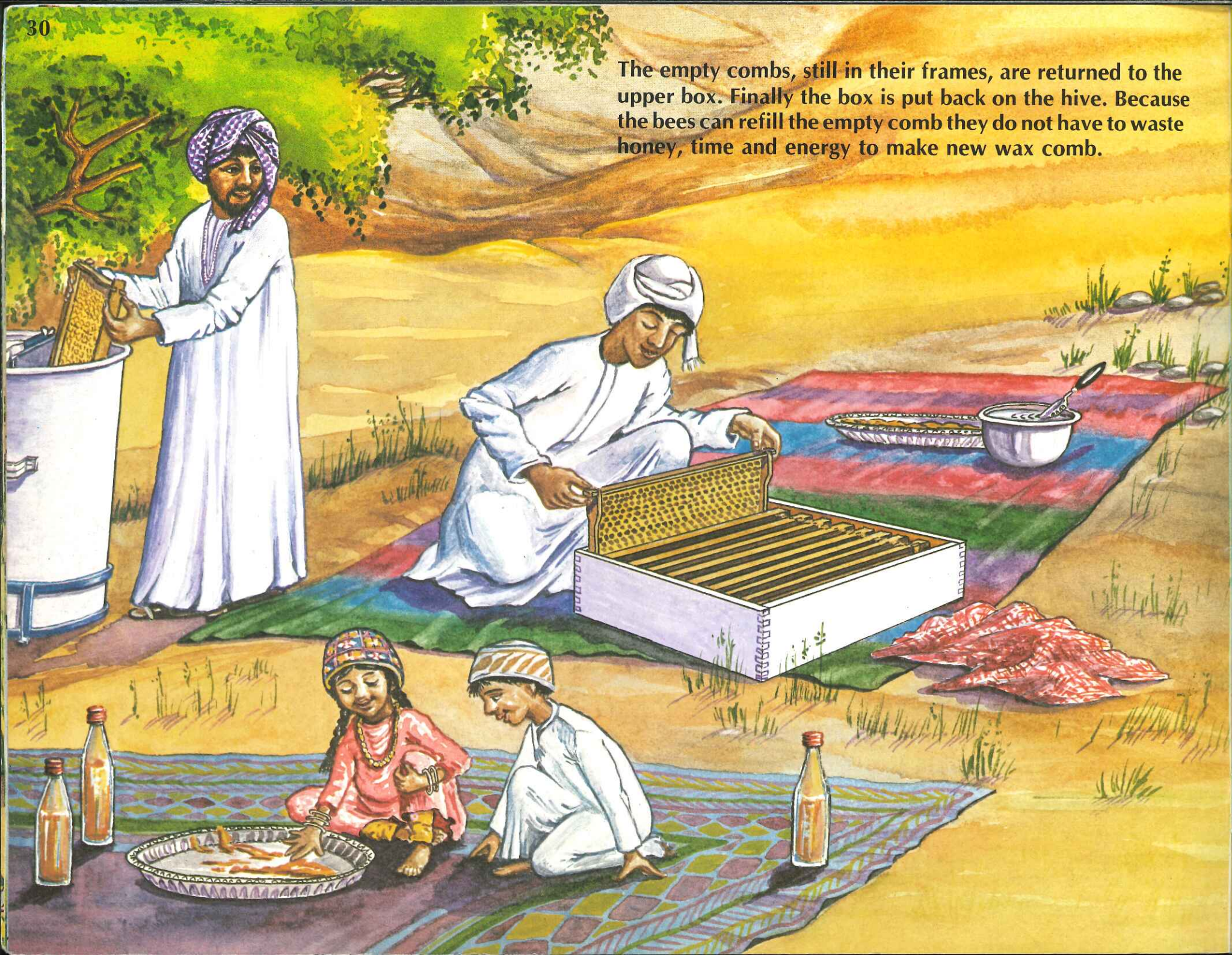
Because
to waste

Honey can be taken from the frames in the upper box without destroying the comb. First, the wax cappings are cut away. Then the combs, still in their frames, are spun round in an "extractor". The honey flies out and collects in the bottom of the drum.





The empty combs, still in their frames, are returned to the upper box. Finally the box is put back on the hive. Because the bees can refill the empty comb they do not have to waste honey, time and energy to make new wax comb.

Honey can
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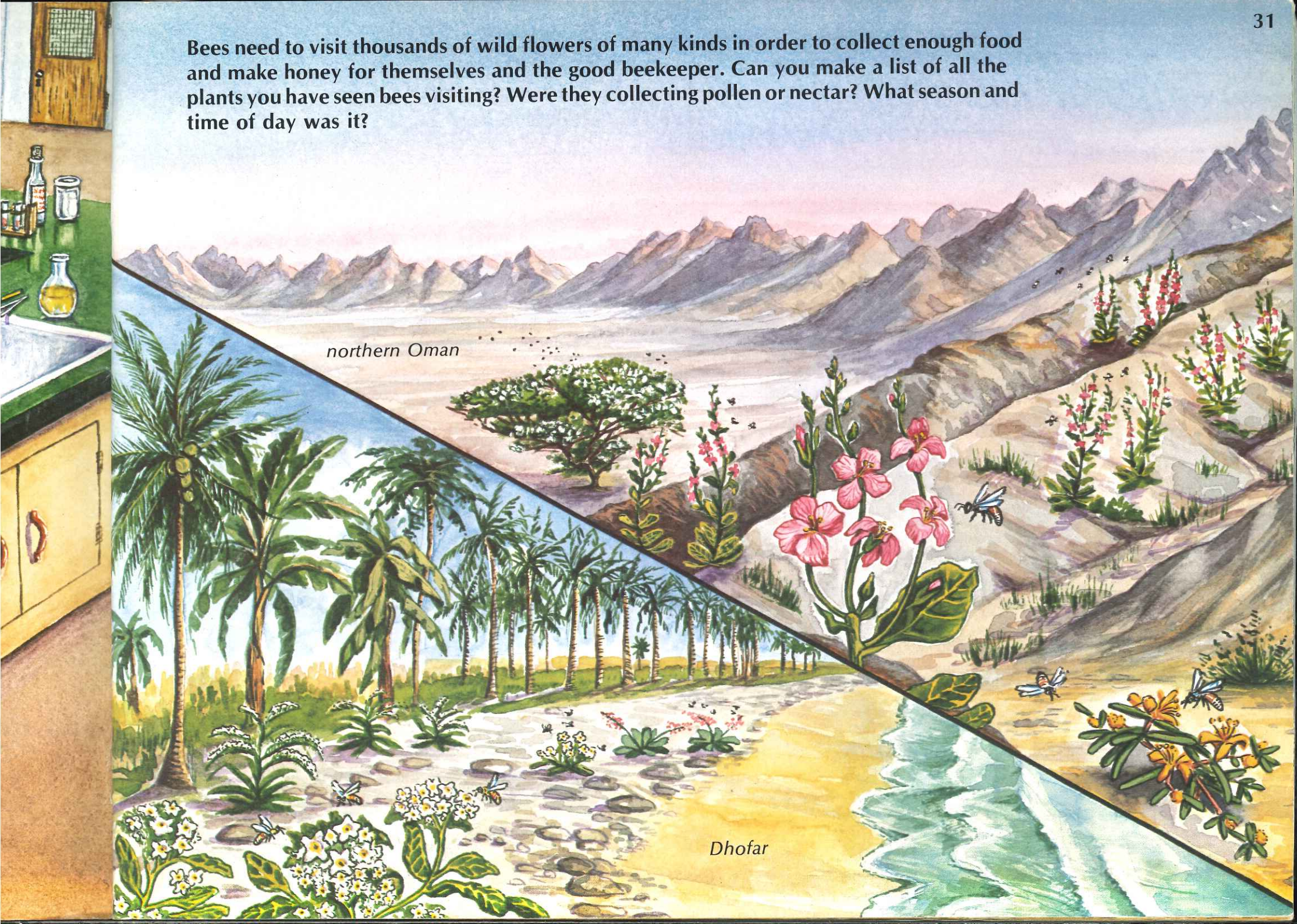
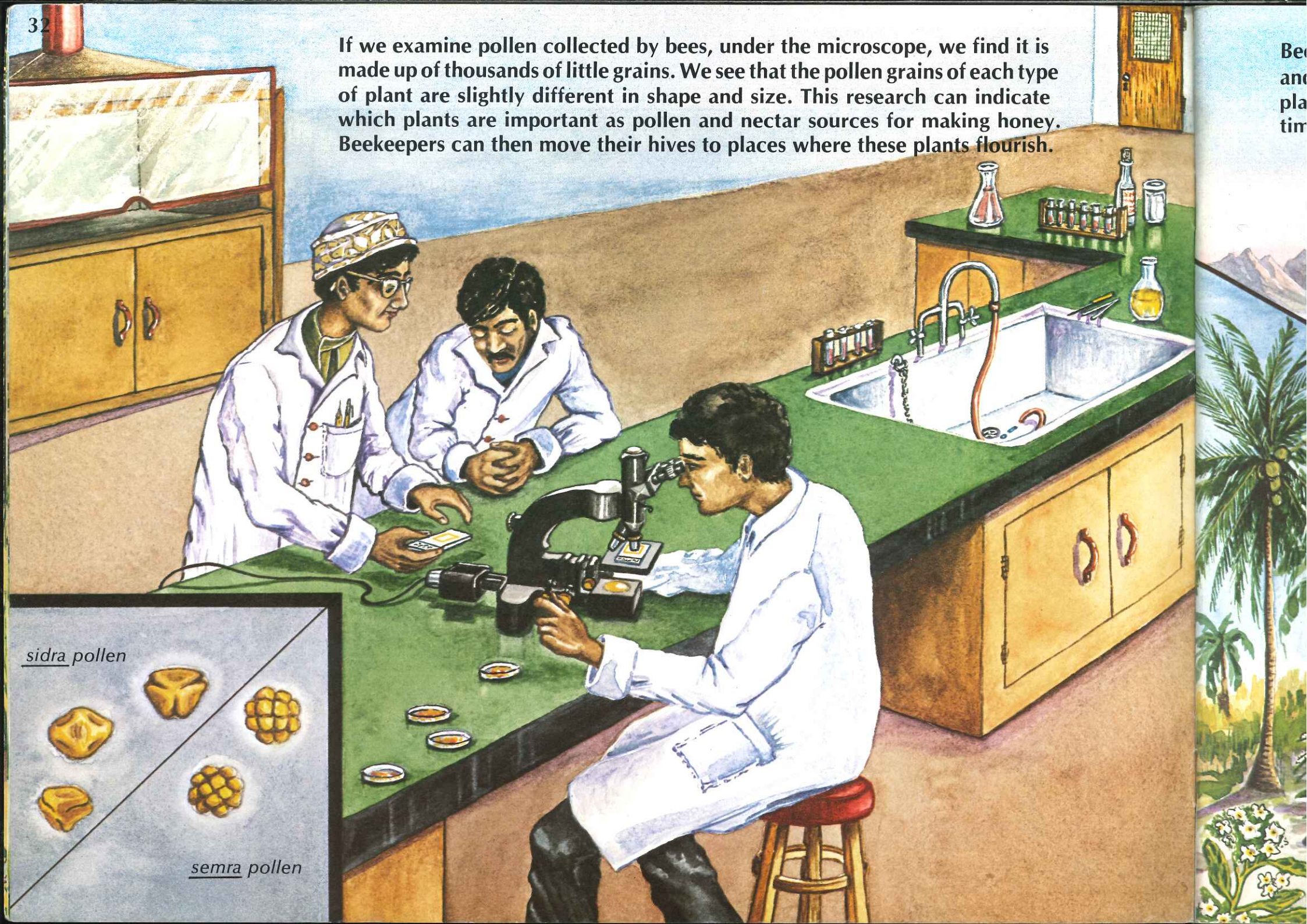
Bees need to visit thousands of wild flowers of many kinds in order to collect enough food and make honey for themselves and the good beekeeper. Can you make a list of all the plants you have seen bees visiting? Were they collecting pollen or nectar? What season and time of day was it?



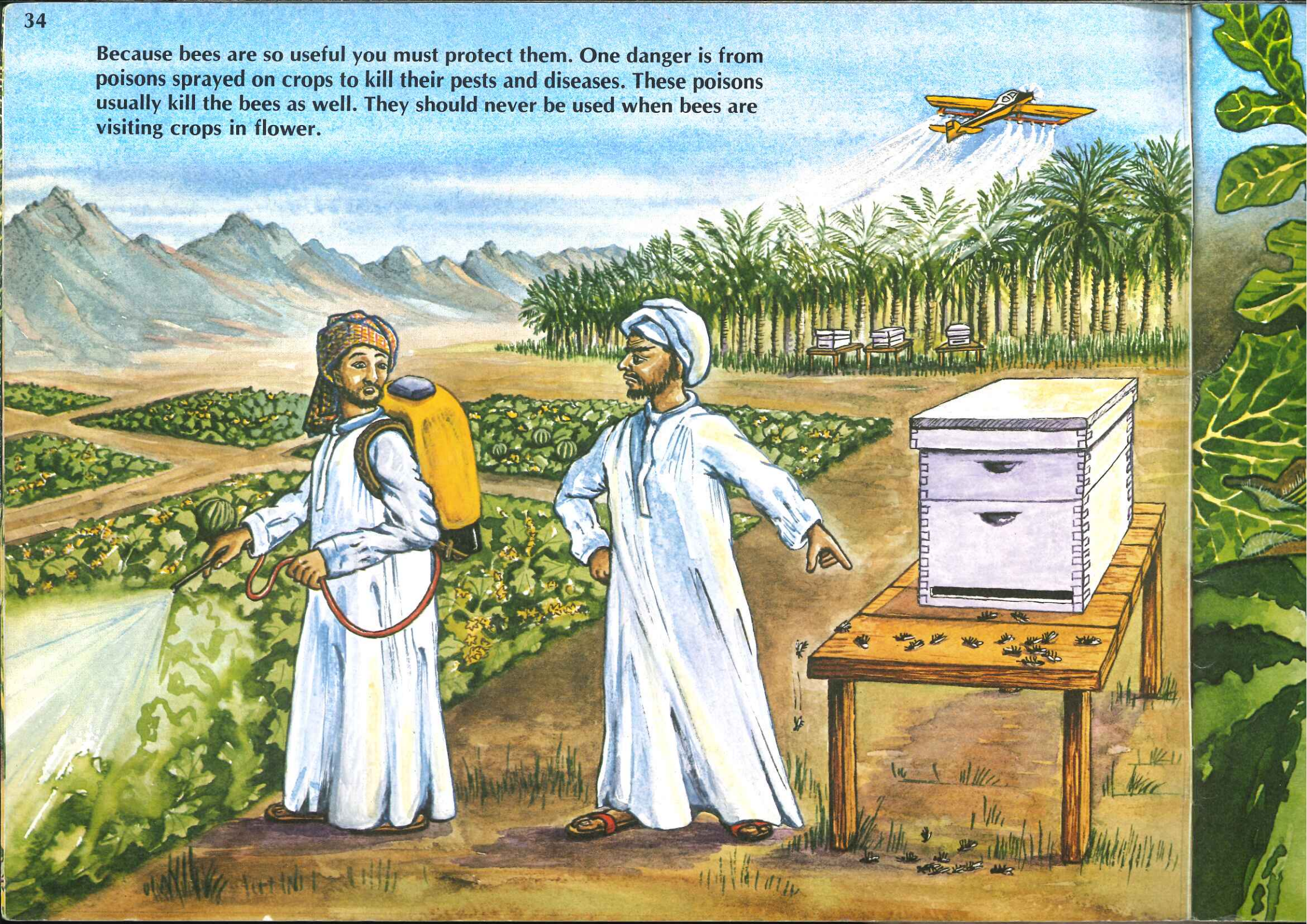
If we examine pollen collected by bees, under the microscope, we find it is made up of thousands of little grains. We see that the pollen grains of each type of plant are slightly different in shape and size. This research can indicate which plants are important as pollen and nectar sources for making honey. Beekeepers can then move their hives to places where these plants flourish.

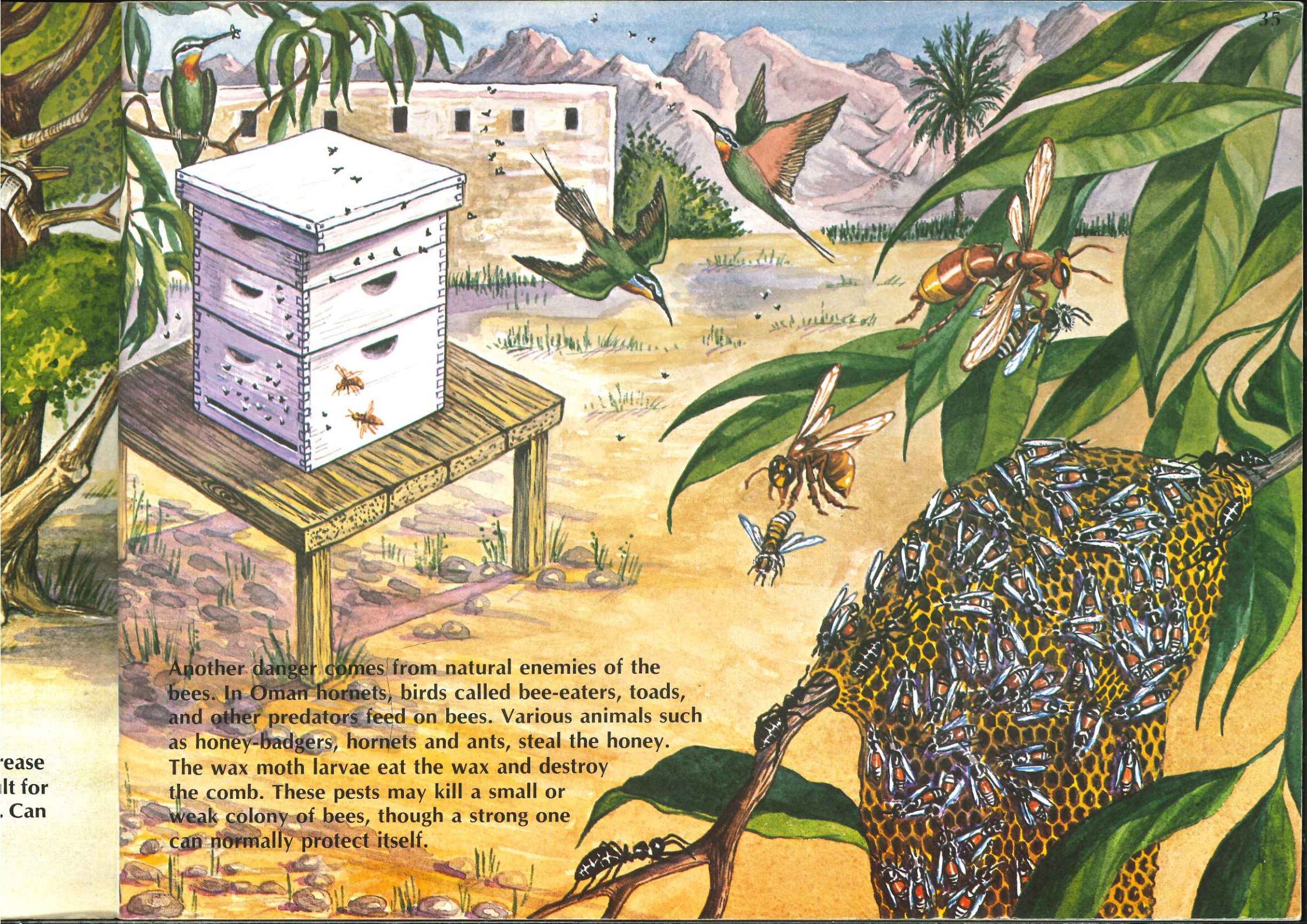


Bees visit the flowers of crops too, such as coconuts, mangoes, limes, alfalfa and water-melons. While collecting pollen for themselves the bees carry some from one flower to another. This process is very important in some plants because it pollinates the flowers. Better fruit and more seed is then produced.

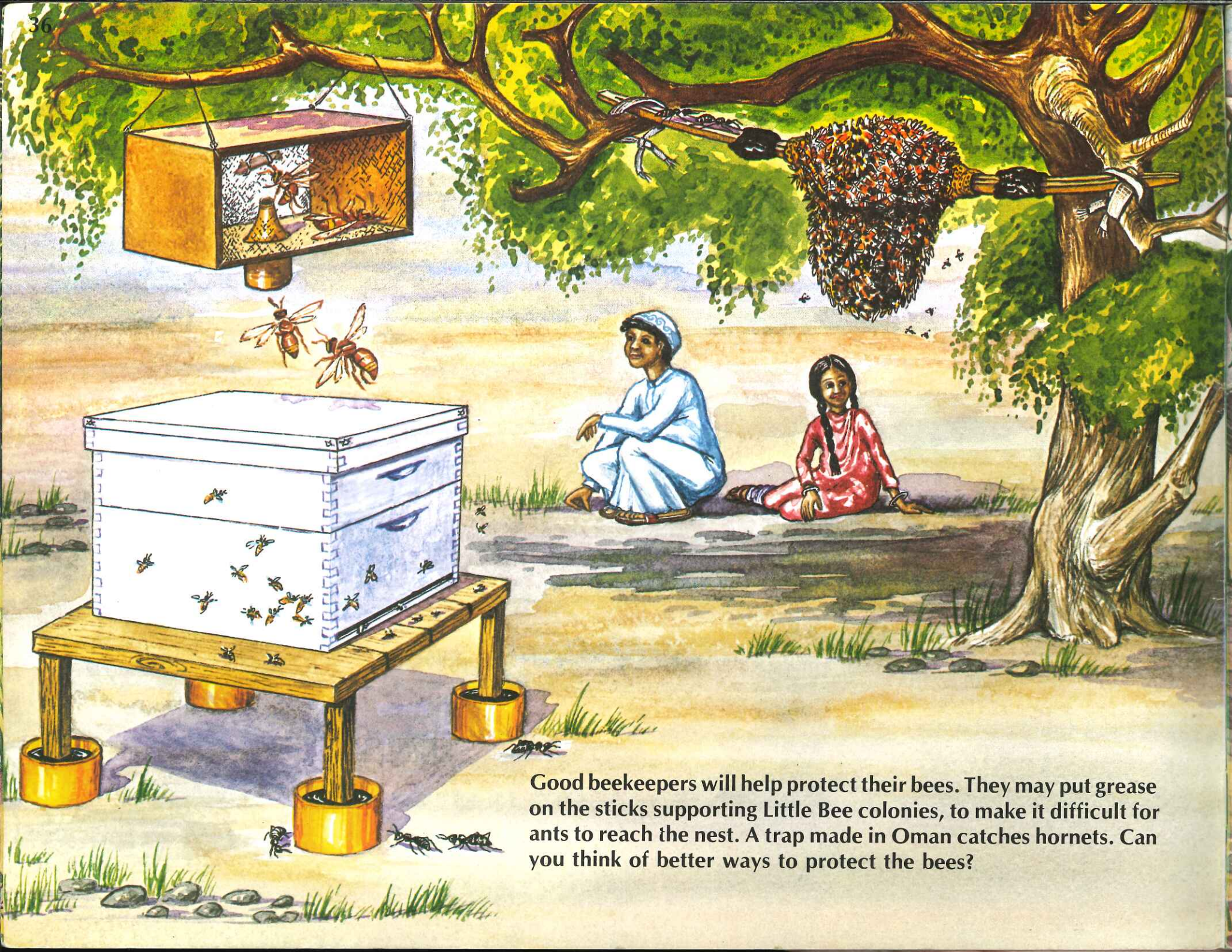
melon pollen

Because bees are so useful you must protect them. One danger is from poisons sprayed on crops to kill their pests and diseases. These poisons usually kill the bees as well. They should never be used when bees are visiting crops in flower.



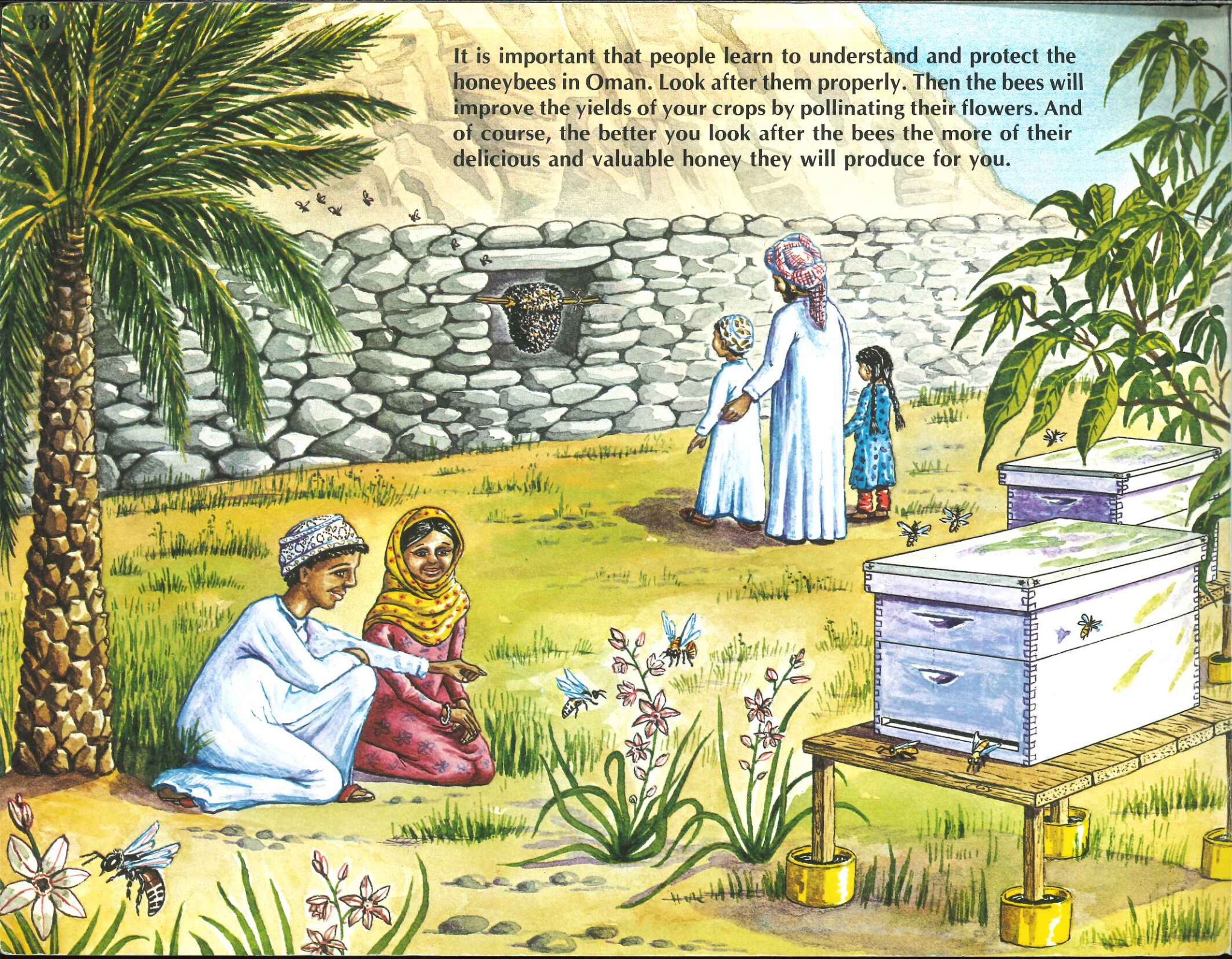


Another danger comes from natural enemies of the bees. In Oman hornets, birds called bee-eaters, toads, and other predators feed on bees. Various animals such as honey-badgers, hornets and ants, steal the honey. The wax moth larvae eat the wax and destroy the comb. These pests may kill a small or weak colony of bees, though a strong one can normally protect itself.



Good beekeepers will help protect their bees. They may put grease on the sticks supporting Little Bee colonies, to make it difficult for ants to reach the nest. A trap made in Oman catches hornets. Can you think of better ways to protect the bees?

In spite of experiments in Oman, there is not yet a successful hive for Little Bees, and no way of extracting the honey without destroying the wax. Unlike Big Bees, Little Bees are difficult to keep in hives. Like nomads they rarely stay long in one place. If their honey is taken or if they are disturbed too much they may all fly away. Can you think of ways of making Little Bees easier to manage? Why not test them yourself?



It is important that people learn to understand and protect the honeybees in Oman. Look after them properly. Then the bees will improve the yields of your crops by pollinating their flowers. And of course, the better you look after the bees the more of their delicious and valuable honey they will produce for you.

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