

# Community Insects: Teacher's topic guide

## God is Wise Year 5

### Spiritual awareness

This unit is based on Proverbs 6:6-11. This proverb serves as a wakeup call against the dangers of laziness. Culturally, laziness is becoming more and more acceptable. But the Bible teaches us in this passage that laziness ultimately leads to destruction. We can look at the ant as an example of how we are to live. Ants work hard, even without supervision. They plan ahead for times when they will have less food. It would be wise for us to be the same way. We should not waste our time but work diligently at whatever task we are given.

### Values: Our response to 'God is Wise'

Students will:

- Recognize that there is wisdom in applying ourselves to work; to work hard at whatever task we are given by God.
- Ask God what is the right thing to do, and do it.
- Listen to people who are wiser than me.
- Listen to my parents and teachers.
- Obey God's word.
- Do what Jesus would do.
- Ask Jesus to be the guide throughout my life.
- Show wisdom in caring for God's Creation.

### Bible references:

Proverbs 6 The wisdom of the ant

Proverbs 30:24-25 There are four animals in the world that are small, but very, very clever: ants: they are weak, but they store up their food in the summer. (The other 3 animals are rock badgers, locusts and lizards, verses 26-28)

Matthew 25 the parable of the girls and their lamps – wisdom in being prepared for the future

Ecclesiastic 9:10 Whatever your hand finds to do, do it with all your might.

Phil 2:14 Do everything without grumbling or complaining.

### Outcomes

Students will observe:

- the wisdom of the ant community in: preparing for the future, working hard and not being lazy.
- the instinct used by community insects, and relate this to God's gift of wisdom i.e. knowing the right thing to do.
- the wisdom displayed in the insect communities, and the ability to work together in an organized fashion.
- the serving qualities in the insect communities, with each member working to help other members.
- the intricate and elaborate systems of ant and bee communities, designed by the Creator.

### Discussion

Begin by asking the class what they think work means. Explain that work is when we are doing the things that we have to do in life. For young children, work might be cleaning up their toys or going to school or preschool and doing their best. Explain that God wants us to work hard at whatever it is we need to do. He does not want us to be lazy.

Read Proverbs 6:6-11. Think about ants. Anytime you go outside and see ants they are working hard. They scavenge for food and work together to complete tasks that are hard.

How can you work hard like an ant when you are asked by our parents or teachers to do something? The best way is to do the job without complaining. We can work with brothers or sisters at home, or with class members at school.

Ants work hard and plan ahead. As Christians, we should work hard and do our best to please God. On the other hand, when we are lazy we can get ourselves into a lot of trouble. Putting work off until later means that the work piles up and it is harder to do it later.

### **Activities**

- Describe the habitat and community behaviour of ants, bees and wasps.
- Make regular observations of ants in the school ground.
- Set up sources of sugar or honey to attract the insects.
- Research community roles, mating, and egg laying.
- Record information.
- Draw and label community insects, including queen and workers.
- Observe the wisdom of the ant community in preparing for the future and discuss how this can be applied to our own lives.
- Observe the instinct used by community insects and relate this to God's gift of wisdom i.e. knowing the right thing to do.
- Observe the wisdom of insect communities in being able to work together in an organized fashion.
- Observe the serving nature of community insects, each member serving another.
- Mathematics: Work with hexagons and triangles; Work on the 6 times table, counting the legs of ants or bees.

### **Art**

- Make a giant beehive from hexagons and make paper mache bees to go on the hexagon patterned background.
- Make paper mache ants
- Make 3D cut-outs of ants
- Make ant thumbprints: make a stamp pad from a damp kitchen sponge. Drop paint on the sponge and work it in. Two thumb prints make the ant's body. Use a marker or black pen to draw legs and feelers on the ant. Put the Bible verse, Proverbs 6:6, on the paper as well.

### **Assessment**

1. Present a report on valuable work that they have done over a week.
2. Present information on one species of community insects using drawings and text.
3. Submit a diary of your observations of community insects.
4. What have I learned from the study of community insects...
  - a. about God and the Bible?
  - b. about doing what God wants me to do?

**Literacy:** Aesop's fable: The ant and the grasshopper

**Thinking Skills:** Community Insects

**Beacon Media student research cards:** Ants, Bees, Insects

**Biography:** Peter Ambouofa

# God is Wise: Values education Year 5

## Wisdom

### Wisdom is ...

Knowing the right thing to do and doing it

Being wise is different than being smart. A smart person knows a lot of facts, but a wise person is able to apply those facts to the situation at hand. If you want to make wise decisions, you must realize that every decision is important. Just as it takes thousands of small bricks to construct a large building, your character is made up of thousands of small decisions.

Every decision we make has a consequence. It can be a good consequence or a bad consequence. Sometimes consequences affect just one person, and sometimes they affect many.

Whether the outcome is good or bad, a wise person learns from past decisions and makes better ones in the future. Even the worst mistakes can become the best lessons for those who are willing to learn!

### How to become a wise person:

- listen to my parents and teachers.
- learn from mistakes.
- choose my friends carefully.
- consider the consequences.
- ask, "What is the right thing to do?"

### Questions:

Who are some wise people you know? What can you learn from them?

Who are some friends that encourage you in the right direction?

What do you think the saying means, "You reap what you sow"?

What do you think happens if you don't learn from your mistakes?

### What does the Bible say about wisdom?

Prov 2:6 For the Lord gives wisdom; from his mouth come knowledge and understanding.

James 1:5 If any of you lacks wisdom, you should ask God, who gives generously to all without finding fault, and it will be given to you.

Matthew 7:24 Therefore everyone who hears these words of mine and puts them into practice is like a wise man who built his house on the rock.

Galatians 6:7 You reap what you sow.

# Art Year 5

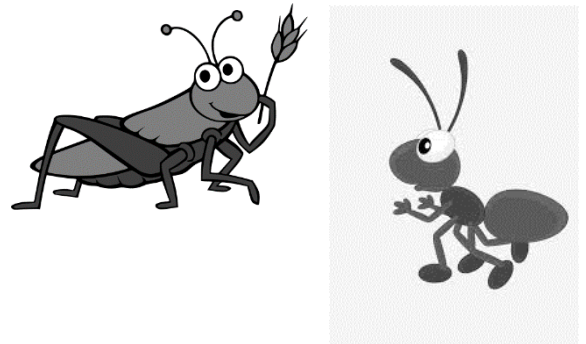
## God is Wise

### Topic: Community insects

**Biblical wall display:** Students can illustrate the story of the ant and the grasshopper, with caption, "Consider the ways of the ant and be wise! It stores provisions in summer and gathers its food at harvest." Proverbs 6:6

#### Drawing

Students can make a cartoon strip to tell the story of the ant and the grasshopper. They can invent cartoon characters and use speech bubbles to tell the story.



The students can also make up stories using ant / bee characters and show this as a cartoon strip.

Examples:



#### Construction

Make a giant beehive from cut-out hexagon shapes and add modelled paper mâché bees.



# Practical Science Year 5: God is Wise

## Topic: Community Insects

### Attracting bees

Have you ever wondered how bees and butterflies know where to find good feeding spots? These insects don't have sharp vision, but they see polarized light (which tells them direction based on where the sun is) and patterns of ultraviolet light on bright-colored flowers with lots of nectar. Bees also recognize man-made patterns; sometimes beekeepers put a symbol on a new hive so their bees can remember which is the right one.

Do this experiment to test how well bees recognize patterns - and see if you can fool them! You'll need about a week to do this project, with time to check your homemade bee feeder every day.

#### What You Need:

- 5 pieces of card, about 12 cm x 9 cm
- 5 small dishes
- 5 plastic zip lock bags (Food storage bags)
- 1/4 cup sugar
- A black marker
- 3/4 cup water

#### What You Do:

1. On each piece of cards, draw a simple shape with the marker. (You might draw a star, circle, cross, triangle, and square.) Make the shape big enough to cover most of the card and fill in the shape so that it's solid black. When you're done, stick each card inside a zip lock. This will protect it from being ruined outside.
2. Set the bags outside in a flat, sunny spot where they won't be disturbed. Make sure the shapes are facing up. Each one should be placed about half a metre (2 feet) away from the others. If you live in a windy area, use rocks or a stake to hold down the bags!
3. Mix up some sugar water, the "nectar" that will attract bees and other insects. (Real nectar, from flowers, is a similar sugary liquid.) Heat the water until it's almost boiling. Then stir in the sugar until it's dissolved. Pour the sugar water into one of the small dishes; fill the other four with plain water. Set a dish outside by each of the zip lock bags. Make sure you remember which dish has the sugar water!
4. During the next few days, keep track of what kinds of insects visit the dishes. How many days does it take before bees find the one with sugar water? A few days after you've seen bees at the sugar water dish, switch cards so that the shape that was next to the sugar water is now by a dish of plain water. What happens in the next two days? Do the bees come right to the sugar water, or do they land on the dish with the card that used to be next to the sugar water? Now leave the cards where

they are, but switch the sugar water dish with another dish of plain water. How do the bees respond?

**Taking it further:**

While you watch the bees' reaction, keep an eye on other insects, too. Do butterflies and ants respond the same way? Did one kind of insect seem to have an easier time re-locating the sugar water? Try the experiment using different-colored circles, instead of different shapes. Did any of the results change? Do insects seem to recognize colors as well as shapes?

<https://www.homesciencetools.com/a/bee-memory-experiment>

# Practical Science Year 5: God is Wise

## Community insects

### Collecting ants

To collect your ants, remove the top of the anthill or mound with a trowel or spade. Put them in a container with a lid.

Dig up some soil from near the colony and put it in a bucket. Note carefully where you collected them, since you will have to return here to release your ants.

Before putting them in your ant farm, place the ants in the refrigerator for 10 minutes to calm them.

### Make an ant farm

<https://www.wikihow.com/Build-an-Ant-Farm#/Image:Build-an-Ant-Farm-Step-11-Version-4.jpg>

1. Get 2 jars with lids – one small and one larger. Place a lid on the smaller jar and set it inside the larger one. To keep it centered in the middle of the larger jar, you can put a dab of glue or tape on the bottom before you set it inside. Make sure you put the lid on securely, since you don't want ants accidentally falling in. (Diagram 1)
2. Use a spoon to fill the remaining space in the larger jar with the dirt mixture. The dirt should not be tightly packed; make sure it's nice and loose, so the ants will be able to move around. Leave about 5 cm (an inch) of empty space at the top of the jar. This empty space will keep the ants from climbing up the glass and out of the jar when you need to open the lid. (Diagram 2)
3. Place the ants in the larger jar and screw on the lid of the smaller jar. Carefully drop the ants in the jar, making sure they all make it into the fine dirt you provided. Cover the top of the larger jar with paper and use a sharp knife to puncture it with tiny holes, to allow oxygen to reach the ants. (Diagram 2) Make sure not to punch the holes too large, or the ants will escape and build a nest elsewhere.

### Quiz

Why should you leave space open at the top of the jar instead of packing the dirt all the way to the top?

- So the ants receive plenty of oxygen.
- So the dirt isn't too tightly packed.
- So the ants don't climb out through the holes in the lid of the jar.
- So the ants don't escape when you open the jar.



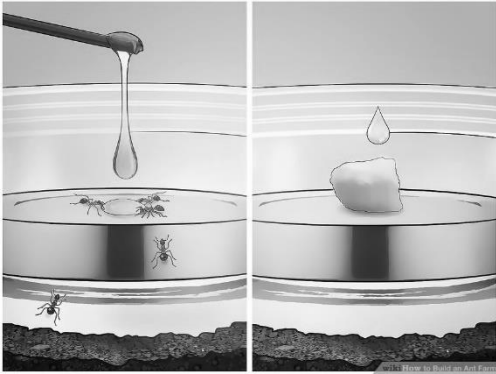
Diagram 1



Diagram 2

**Caring for your ants**

1. Offer them food and moisture. In order to keep your ants happy, you can feed them every few days with a few drops of honey, jam, or pieces of fruit - ants love sugar! (See diagram below.) Don't overdo it, or you'll have mold in your ant farm. Ants get most of the moisture they need from food, but if it looks like the dirt and sand mixture is getting dry, wet a cotton ball with water and place it at the top of the jar for a few days. Don't give the ants meat or other cooked food. This will attract other types of pests to your ant farm. Don't pour water into the jar. It'll get too wet, and the ants could drown.
2. Cover the jar when you aren't watching the ants. Ants do their tunneling at night, in the dark. To replicate the environment they're used to, cover the jar with black cloth or construction paper when you're not watching the ants. If you forget to do this, the ants will be stressed out and much less active. They'll also tend to stay away from the glass and spend their time as close as possible to the center of the jar.
3. Don't shake the jar. Ants are fragile creatures, and shaking the jar or otherwise handling it roughly can cause them to die when their tunnels collapse on them. Handle the ant farm carefully.
4. Store the farm in a warm room. Place it in a room that tends to stay at a good steady temperature. Don't place it in direct sunlight, or the glass jar might heat up too much and overheat the ants.



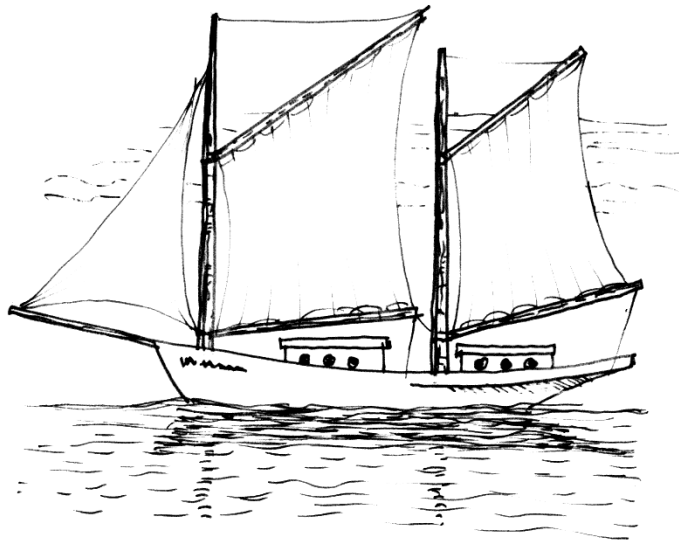


**Thinking Skills Wise Yr 5**

<p><b>Community insects 1</b></p> <p>List the features of both of these, then combine them to design a “superbug”.</p> <p>an ant and a bee</p>	<p><b>Community insects 2</b></p> <p>Work out 5 ways of getting ants off your leg without using your hands.</p>
<p><b>Community insects 3</b></p> <p>There are ants in our kitchen!</p> <p>Work out a way to keep ants out of your food without killing the ants and without using poison.</p>	<p><b>Community insects 4</b></p> <p>We need bees to make our fruit, vegetables and flowers grow.</p> <p>Work out 5 ways of attracting more bees into your vegetable garden.</p>
<p><b>Community insects 5</b></p> <p>You are going to set up a house for an ant family, so that you can study them.</p> <p>Design a comfortable home for an ant family.</p>	<p><b>Community insects 6</b></p> <p>There are too many wasps in the school playground.</p> <p>Design a wasp trap.</p>

# Peter Ambuofa

Biography



“Dad there’s a ship coming into the bay! It looks like the one that takes men to work in Australia.”

Ambuofa was a young man who lived at the northern tip of the island of Malaita, in the eastern region of the Solomon Islands, during the early 1890’s. He had been sitting on the hillside above the beach at Malu’u gazing out to sea when he noticed the sails on the horizon and watched as the lugger drew closer to the shore. He had rushed up the hill to where his father was working in the food garden to tell him about the approaching lugger.

“True, it is one of those ships,” replied his father, “Now Ambuofa, you are old enough to go and work over there yourself. I want you to go on that ship and work for those sugar cane farmers.”

The lugger pulled in as close to the shore as it could, then a small boat brought the master and an officer ashore.

“Look! Here come the men who went away three years ago!” cried Ambuofa. They watched as a second small boat approached the shore with several young men on board. They carried bundles in their arms and on their backs, clothing and other goods bought with their hard-earned wages.

“Are there any strong young men here who want to work in Australia?” the master called out.

“Yes, I’ll go,” responded Ambuofa as he lined up in front of the master. Several of his friends joined him. “We’ll go and work in Australia, and then we can buy clothes and other things to bring back to our families, like our friends who just returned.”

“Right,” said the master at last, “I have all your names. Get into the small boat and we’ll go. I want to visit another village down the coast before night-fall.”

“Goodbye!” called the men to their families on the shore. “We’ll come back with presents for you.”

“Goodbye,” the family members called back, some tearful, wondering when they would see their young men again.

“Get down below,” bullied the master of the lugger when they had scrambled aboard, “Keep out of the way while we get going. You can come up on deck when we are out to sea. All I want is to get you there in one piece. The stronger you are, the better the price I get for you.”

The young men had never been away from their island before and they watched sadly as the Malu’u bay disappeared from sight. Then at last even the highest mountains that formed a spine down the centre of the island had faded into the distance. It was a rough trip and many of the men were sea-sick.

“I’ll be glad to get on the land again,” said Ambuofa to his friends. “This rough sea is awful.”

“We’ll be arriving at Bundaberg soon,” came the captain’s rough voice one morning. “Get up on deck now, everyone. Hurry up!”

As the lugger drew in to the wharf at the port of Bundaberg, the young men stood on the deck gazing in wonder at the new world that was opening up before them.

“Look at those huge ships,” Ambuofa said to his friends. “What are they doing with all those bags on the wharf? What’s in them?”

“They’re loading bags of sugar on to the big ships to send to countries far away,” replied a man who had been there before.

A tall middle-aged Australian came striding along the wharf. The master of the lugger called him over to his vessel.

“I’ve got some good, strong young men for you this time, Mr. Young. They are from Malaita. Take a look at them. They look like a bunch of hard workers, don’t you think?”

“Yes,” he agreed, “I’ll take all of that group there.”

Having settled for a price the men from Malaita were herded on to a barge and taken up river. As the barge chugged slowly along they were able to have a good look at everything they passed. On either side of them were cane fields, their feathery plumes waving in the gentle breeze. Occasionally there was a break in the cane fields, and they saw the rolling green hills in the distance.

“Here we are,” said Mr. Young as they finally pulled in to a landing. “This is my cane farm, called Fairymead. You see the buildings over there?” He pointed to some long wooden sheds. “That’s where you will sleep and live. Find yourselves a bunk bed and settle in.”

The men from Malu’u found a space where they could all be together and looked around. There were crude shutters at the windows that could be closed when the heavy rains poured down during the wet season. The wooden bunk beds were the only furnishings in the building. This was to be their home for the next three years.

“That building over there is where our food is prepared and where we eat,” observed the man who had been there before. “The food is different - no yams or taro here. We mostly eat rice or bread with some meat. And there’s plenty of fruit around.”

The new-comers were soon put to work cutting cane.

“You’ll each take a machete and you’ll have to keep it sharpened with this file. Slash into the base of the cane stalk and toss it in a pile behind you. Another team of men will pick it up and load it on to the dray,” they were directed by the foreman.

The men looked towards the end of the cane field where they could see horses hitched to a large dray. “That’s a huge animal isn’t it?” they commented as they set to work on the cane cutting. It was the first time they had seen horses.

It was hard, sticky work bending over all day cutting cane. Their trousers and shirts were soon black and sticky with cane juice, and they were very thirsty.”

“I’m terribly thirsty,” Ambuofa complained to his friends, “it’s time to stop for a drink.”

There was a canvas water bag hanging in the shade of a tree so the men all put down their machetes and enjoyed a drink from the water bag. They had been up since sunrise and were sent out to the cane field straight after breakfast. Now the heat of the sun overhead was beating down on them so they welcomed the short break and the water. At the end of the day they were glad to trudge back to their living quarters for a meal and a well-earned sleep.

Six days a week this was the routine, but Sunday was different. It was a rest day and the Kanakas (the name given to imported labourers), were free to have a break from work. But there was something else that made Sunday different. It revolved around Miss Florence Young, the sister of the plantation owner, Mr. Young.

Some ten years before Ambuofa and his friends came to work at Fairymead, Florence Young came to stay there with her brother. She was to teach the Bible to the children of the white people there, but she became keenly interested in the islander men working in the cane fields.

“I feel so sorry for those men,” she thought, “they’ve never heard about Jesus, God’s Son, or about the Creator God. God loves them as much as He loves us, but no-one has told them about Him.”

She was sitting on the verandah of their timber home one day, looking out at the men slashing away at the cane in the fields when her brother joined her.

“You look very thoughtful, Florence,” he observed, “What’s on your mind?”

“I’m thinking about those workmen out there. God loves them as much as He loves you and me, but no-one has told them about Him. There isn’t a Christian missionary to help them anywhere in Queensland.”

“That’s true, Florence, but what can we do about it?” asked her brother.

“I believe God wants me to teach them. I could have a reading and Bible class on Sundays when the men don’t have to work. What do you think about that?”

“But these fellows have never had any schooling. They’ve never learned to read. They’ve never even seen a book before. Don’t you think you’d be wasting your time?”

As others heard about Florence’s project they were equally doubtful. “It won’t last,” they said. “They won’t be able to concentrate for very long. Why should you bother?”

However, Florence persisted, believing God was calling her to do it. Their overseer’s help was enlisted. He spoke to the workmen one evening explaining to them in Pidgin as best he could, “On Sunday Miss Young wants to talk to you. She will teach you how to read, and she will teach you about God our Creator and Jesus His Son. If you would like to join the class, come along on Sunday.”

Ten men came to the first class on the following Sunday. Florence had only one book, a reader which her sister had used in her early days, but she believed that as God had called her to do this He was going to give her wisdom to do it well. First she had to master the Pidgin language herself before she could teach her students anything, but bit by bit she learned enough to pass on each week. For the first lesson she produced a butterfly chrysalis and used it to illustrate the truth of death and resurrection, particularly relating to Jesus.

Week after week she prayed, “Lord, what do you want me to teach them this time?” And each week the Holy Spirit, the Teacher, gave her the wisdom to reach the minds and hearts of these men. The men were each given a large print New Testament from which they learned both to read and to learn about the Christian faith.

Contrary to the expectations of those around her, Florence saw the number of men in the class grow and their interest and understanding steadily increased. In 1885, nearly three years after the Sunday lessons began, one man, Jimmie Aoba, stayed behind after the class. Shyly, he confessed to Florence Young, “Missi, I want to belong to God. I want to know more about Him. We have a lesson on Sunday, then there are six days without lessons. Could you give us lessons every day?”

Florence was delighted to respond to Jimmie’s request, so every night, after the evening meal they found a quiet place sometimes on the verandah, or in a shed, or the wash-house, and Jimmie would bring along a few of his friends. Jimmie soaked up the teaching, now that he had turned his back on the evil spirits he used to believe in and trusted in God. He prayed earnestly for his friends, “Please Lord, help my friends to know you too.”

Jimmie was in poor health and some months after his conversion he died of tuberculosis. But within nine months of Jimmie’s death his prayers were answered and twelve of his friends had believed in Jesus and decided to live a Christian life.

One day, when the Young family was all together, they began discussing the growth of Florence’s work.

“God has been very good and has blessed our work at Fairymead.” observed Florence.

“But think of all the other sugar cane plantations where there are islander workmen. No-one is teaching them.”

“Do you think the teaching could be extended to other plantations?” asked Florence’s sister-in-law, who had joined Florence to help her with the Sunday Bible classes. “We could write to all the plantation owners and ask them if they would be open to receiving a Christian teacher to come and teach their workmen.” suggested Florence’s brother.

So a letter was written to ‘all employers of South Sea Islanders’ and Christian friends, informing them of the appointment of a missionary to the Kanakas and asking them to provide facilities to hold a class on each plantation. The missionary would be supported by the freewill offerings of friends of the Queensland Kanaka Mission. It happened that Mr. George Muller, a Christian from England who had raised thousands of pounds to provide homes for needy children simply by praying to God, was in Sydney at this time. He saw a copy of the letter and said to Florence’s sister, “I think the Lord wants me to help with this work,” and he gave to Florence the first contribution to the mission.

“Tell your sister to expect great things from God and she will get them.” were his words of encouragement.

In 1886 the missionary, Mr. Johnson, was welcomed on the plantations and there were many lives transformed as the islanders responded to the Christian message. Other teachers joined the mission and the work grew.

Ambuofa, now known by his Christian name, Peter, with some friends from Malu’u, had become Christians and for the three years they spent at Fairymead in the early 1890s they learned about living a Christian life. Now the time was fast approaching when they would return to their island home.

“Our lives have changed such a lot since we came to Fairymead,” Peter said to his friends one day. “We’ve started to live the Christian way and we’re different from when we first arrived here.”

“Yes,” replied one of his friends, “we used to get angry and fight with anyone who crossed us. In the village we always had to carry a spear in case we needed to defend ourselves.”

“And we always had to have a ‘pay back’ if anyone did us wrong.”

“It’s much better now. Someone hurts us and we forgive him. We don’t have to fight all the time. Our villages would be much happier if everybody followed the Christian way.”

“We don’t have to be frightened of evil spirits or the witch doctor either, because God’s Holy Spirit is stronger and He protects us.”

Then Peter grew thoughtful, “You know, it’s going to be hard going back to our people in the village. They’ll want us to be like them, and that’s not the Christian way to live. I heard that some of the Christian men who went back were killed by their families because they didn’t want to return to the old ways in the village.”

“We should pray for our people and ask God to help them to know Him.”

So the men prayed a lot for their families and friends back on Malaita whom they would soon be meeting again, praying that God would keep them strong when they returned to their villages.

It was during the year 1894 that Peter and two of his friends boarded a lugger to return to their home village, Malu'u. After several days the mountains of their home island could be seen on the horizon.

"Look! There's Malaita! You can just see the tallest mountains away over there."

"Oh, it will be good to see our parents and brothers and sisters again!"

"It will be wonderful to have yams and taro to eat."

But underneath all the excitement there was an underlying concern which Peter expressed,

"I am praying that they will believe the Christian message that we have learned," he said seriously. "We know God loves us, but they haven't heard about Him yet."

These young men had experienced such a change in their lives since they learned to know Jesus, and they wanted their people to know Him, too. With growing excitement they watched as the lugger pulled in to Malu'u harbour. Finally, the small boat was lowered and the three young men came ashore, back on to their home land at last. It was not the custom for them to go straight into a village, even their own, without being invited by the people of the village. There were four young lads looking for crabs on the beach. Peter called them over and asked them, "Would you go up the mountain to our village and tell our families we have returned."

The three young men sat on the sand under a tree to wait, watching the mountain path for the first sign of their family members. Then at last Peter recognised his parents coming down the path, his father carrying his spears and his mother laden with two large bundles.

"Is that you, Ambuofa?" asked his mother. His three years in Queensland had changed his appearance. His hair was close-cropped instead of being wild and shaggy and his face had a new expression inspired by God's Spirit in him.

"What are you doing here?" they asked. "We hear you bring some strange stories. Who is this person you talk about?"

Peter began to tell them. "I am a voice of Jesus." but the new ideas were meaningless to the parents who simply wanted their son to return with them to their mountain village.

His mother took a piece of cooked taro from the basket she carried. "Son," she said, "come back with us to the village. This taro is your food, but if you don't come back with us you'll die of hunger."

Peter slowly shook his head. He desperately wanted to be with his family again but he couldn't go back to the old godless ways. His mother put the yam back in the basket, giving Peter nothing. He recognised this as a sign that they rejected him from the family unless he turned his back on his new way of life and came back to the village with them.

Peter remained steadfast. "I can't change back to the old ways. The new Christian way is better for all of us." he told his parents. Sadly he watched, with a heavy heart, as his parents climbed back up the mountain track without him.

The three remained at the beach for a few days, until the families of the other two heard they had returned and persuaded them both to go back to the village. Peter was left alone with very little food. Soon, he was joined by two of the four boys they had

met on the beach when they first returned from Queensland. Now there were three people to feed and practically no food to eat, for there were few trees in the beach area.

“Lord, we have no food to eat here. Help us to find food, please.” he prayed desperately.

Looking up, he noticed a gnarled old tree called a nwanwa’o, with seed fruits on it. He picked the seeds and cooked them over a fire in a section of bamboo and all three ate the food. This tree continued to bear fruit for the next six months, which was a miracle, for this tree would not normally bear both immature and ripe fruit at the same time or for so long a time.

“The first thing we must do is to make a food garden,” Peter told the boys. “The soil up the hill a little way over there is better.”

They set to work with digging sticks to prepare the garden. An old woman gave them some plants, taro, yams and young banana shoots. After six months, they were able to harvest the first food from their garden. One day, soon after their first harvest, Peter went to the nwanwa’o tree looking for fruit, but there was none. “Heavenly Father, you kept the nwanwa’o tree bearing fruit for as long as we needed it, but now we have our taro and yam we don’t need it. Thank you Father for providing the fruit. This is one of your miracles.”

Once the food garden was established Peter ventured to climb the mountain track to visit his people. When he told them the good news of Jesus one of his brothers and another boy came to Peter. “We want to know more of this Jesus story. Can we come back and live with you so we can hear more about it?”

Peter was delighted. “Of course you can. We can put up another bush house and make more food gardens. We would be pleased for you to join us.”

Peter was not particularly good at reading and writing, but he certainly had God’s word and life in his heart. He now had four boys to teach the Christian way. Often he thought about Miss Young and the teachers she appointed to the sugar plantations. “I wish she could send someone here to help us,” he thought.

One day they noticed a ship sailing into the harbour, bringing back labourers who had served their three years on the plantations. Quickly Peter sprang into his canoe and paddled at full speed to the lugger. As the men disembarked, he climbed up on deck, looking around for something to write on. This was his chance to send a message to Miss Young. He picked up an old hessian sack that had been tossed into a corner, chewed some betel nut to produce red ink’, and wrote with his finger on the sack, “Come, help me. Peter Ambuofa.

Tying it up with a length of bush string he handed it to a labourer who was boarding the lugger, returning to work in Queensland, with the request, “Would you please give this to Miss Young at Fairymead?” A thousand miles away and passed from hand to hand, who knows how, the message eventually reached Florence Young and her friends of the Queensland Kanaka Mission.



“What can we do about this?” they asked themselves, “It all seems too big and impossible for us”

Meanwhile Peter continued at the beach-side village at Malu’u, faithfully teaching his four disciples. One day he went up to a mountain village where a heathen feast was in progress.

“Let me sing for you,” he asked the village leader. Peter sang “Jesus loves me” which he had translated into the local language, and then told them the story of Jesus. The village people listened attentively.

Next day a young lad came down the mountain to Peter, saying, “I heard you sing that song yesterday, and I’ve come to stay with you to learn more about Jesus.”  
“You’re welcome to stay and learn with us,” replied a smiling Peter. We want you to know Jesus and to tell the other village people about Him.”

Then a tragedy happened. Peter’s young brother, who had been living with him to learn the Christian way, suddenly died.

“You’ve brought white man’s devils to kill our young brother. We’ll kill you for this.” the older brothers threatened. Peter knew they meant what they said and was always on the alert, watching out for danger. But Peter’s life was preserved time and again. Several times, as he was going to sleep at night, the thought came to him, “I won’t sleep there tonight, I’ll move to the other side of the house.” Sure enough, a spear was thrust through the coconut leaf wall but failed to hit the target, for Peter had moved his sleeping mats. Several times men lay in ambush on the mountain track to catch and kill him, but on those occasions Peter had decided to go by a different track.

One night armed bushmen crept up near his hut, spears and clubs in hand, prepared to kill him.

“What’s that bright light in the hut?” they said as they drew near.

“I don’t know what it is but I’m scared,” replied another, “I’m not staying here.” And they all fled off through the bush back to their village to tell of the amazing thing they had seen. God’s angels had once again preserved Peter’s life.

Another time, Peter was planting taro when a group of village men, armed with muskets, crept up behind him, preparing to shoot. But heavy rain wet the gunpowder and once again Peter’s life was spared.

“Peter’s God must be very powerful,” they decided as they talked together in the villages.

Peter faithfully continued sharing the gospel with those around him who would listen. For four years there was not a lot to encourage him. Then there was a drought. The mountain village people watched their food gardens die off without rain, while Peter’s garden flourished and provided all the food they needed. The villagers discussed the situation, “Peter’s God must be great if He can make his garden grow in a drought,” said one.

“And He protects Peter from us when we try to kill him.” observed another.

“Perhaps we should send someone down to learn about Peter’s God,” suggested a village leader.

“We’d better send the women and children down,” said another. “After all, they’re only women; it won’t matter if any harm comes to them.”

So they chose some of the women and children to go down to the coastal village to learn from Peter.

Some little time later, the cry echoed around the Malu’u settlement, “There’s a ship coming in to the harbour!” Everyone rushed down to the beach to see who would be on the ship returning from Australia this time. They watched eagerly as the lugger drew as near to the shore as possible. The small boat was lowered over the side and several Malaitan men joined the ship’s master as they rowed to the shore.

“That looks like our friends Silas Dindi and Charlie Lofea. It will be great to have them back,” cried Peter who was rushing to the water’s edge to welcome his old friends. Silas and Charlie were shown around the little settlement which had grown around Peter’s work. By now there were several bush material houses, and productive food gardens. Peter showed Charlie and Silas around their village.

“Will you stay and help me, my friends? I need help teaching these people, and you have just come back from Australia where you learnt the Bible from Miss Young.”

Charlie and Silas gladly agreed.

“Peter,” they said, “You have done a great work for God here all by yourself. We will be very pleased to stay and work with you.”

Other Christian men returned and joined Peter and his friends in praying for Malaita, that the day would soon come when all Malaitans would be Christian. Charles Pillans, who was working with the Queensland Kanaka Mission on a plantation in Queensland felt God was calling him to go to Malaita to help Peter. But his health suffered in the Solomons due to malaria and difficult living conditions, and after only a few months he died.

Two years later Frederick Schweiger arrived with the intention of continuing Charles Pillans’ work, but he died at Malu’u and his companion became seriously ill, so returned home.

Then in 1900 the new Australian Federal Government passed a law which changed the thinking of the mission. It stated, “*All labourers imported from the islands are to be returned to their homes by 1906. No more labourers are to be recruited.*”

When the Young family and other supporters of the Queensland Kanaka Mission heard this they discussed the matter together.

“This means we won’t have any labourers to teach in five years.” stated Mr. Young.

“Maybe God is telling us to respond to Peter Ambuofa’s calls for help.” suggested his brother.

For months they prayed about it then finally decided that they should establish a mission in the Solomons and that a team should visit the islands to investigate the situation.

The first party to visit Malaita consisted of Florence Young, her friend Mrs. Fricke, and three men newly appointed as missionaries. They came well prepared, with six months' supplies, a pre-fabricated house and a ten-ton ketch named "*Daphne*", specially built for travel around the reef-encircled islands. They travelled by the steamer *S.S.Moresby* to Gavutu, a trading and watering station, in sight of the island of Malaita, with its high mountains stretching down its hundred-mile spine.

Here they disembarked and prepared the *Daphne* for their venture into the Eastern Solomons, particularly Malaita. But it was not all plain sailing. At Gavutu the British Resident Commissioner met with the mission party.

"Yes, Miss Young," he said politely, "I know I gave you permission to travel into the Malaita area when I met you in Sydney. But I really don't think it's wise for you and Mrs. Fricke to go any further. You'll both have to return to Sydney. I made a mistake telling you I would allow you to come."

"But you promised," cried Florence desperately, "You must let us continue our journey as we planned, both of us. If you send Mrs. Fricke back I will be left travelling alone with three men, and that's not right."

Florence persisted and the Commissioner finally and reluctantly gave in allowing both women to continue the journey. Setting off on the *Daphne* with a fair wind in their favour, they came to Langa Langa lagoon at the southern end of Malaita later the same day. There for the first time they saw the man-made islands which were home to large numbers of 'salt-water people'. These islets were built up on the floor of the lagoon. Large boulders of coral rock were gathered and loaded on to rafts, then placed in position on the shallow reef, building up a mound of rocks until it was well above high tide level, sand filling the spaces between the rocks. Then houses were built on top of the mounds. They couldn't grow food gardens there so every three days the 'salt water people' brought fish, crabs and shellfish to the shore of the main island to trade with the 'mountain people' who brought yams, taro, coconuts and fruit. The party in the *Daphne* visited several such islands as they headed north-west up the West Coast of Malaita.

The next day, about noon, they sighted a large canoe coming towards them.

"Are they friends or not?" they wondered.

As they drew near someone observed, "They're wearing shirts and trousers, they must be friends who have been in Australia "

"Let's signal to them that we're their friends. Let's sing a song they'll know."

So the strains of "O for a thousand tongues to sing my great Redeemer's praise." rang out across the water. What a thrill it was to hear the response from the men in the canoe as they joined in the familiar hymn.

"We've come from Malu'u this morning," explained one of the Malaitans when they met and the canoe pulled along-side. "We're taking this food to our brothers in the Christian village down the coast. It's new and their gardens aren't ready for harvesting yet so we are helping them out with food until their gardens are ready."

The people on the *Daphne* looked into the canoe and were impressed with the amount of food, taro, yams, bananas and coconuts they carried in coconut leaf baskets in the bottom of the canoe.

“We’re very happy to welcome you to our island,” said another man. “We’re really very proud to be the first ones to greet you “

After a short chat they separated and each went their way. Later in the day the *Daphne* sailed into the bay and anchored off the white sandy beach near Malu’u. They could see and hear the great excitement as word spread that the ship had arrived. The visitors came ashore in their dinghy to be warmly welcomed by a crowd of young people all eager to shake hands with them.

Then they met Peter Ambuofa, with his wife and little daughter. They listened in amazement as Peter told them of all the Lord had done during his ten years there. His parents and four of his brothers had become Christians; only one brother would still not believe in Jesus, God’s Son. Many others came for teaching. On Sundays there were around two hundred at the worship and teaching meetings.

“God has been very good to us here. It was very hard at first when so many were against me and against God, but He looked after us and provided the food we needed. We thank Him for His goodness. And I want to thank you, my friends, for coming to visit us. It is a great encouragement to see you here.”

“Peter, you’re such an encouragement to us,” Florence Young replied, “When I started those classes back at Fairymead I had no idea how they would grow, but God expanded the mission far beyond what I expected. Now, we’ve come out to you here and we have two men who are willing to come back and stay with you to help with the Bible teaching here at Malu’u, if you would like them to.”

“Miss Young, that would be the answer to my prayers I’ve prayed for a long time. It will be wonderful to have their help.” responded Peter, his eyes full of tears.

The missionary party had planned to continue their journey down the east coast of Malaita on their way back to Gavutu, but they were all suffering serious bouts of malaria. They needed crew to help them with the *Daphne*, as the mission men were too ill to do anything, so they took on some ‘salt-water people’ as crew. The night before their departure Florence could not sleep so she spent the time praying for guidance, not knowing why she was feeling so disturbed in spirit.

The next morning Charlie Lofia came to Florence. “You know those Ata’a men you signed on as crew?” he began. “Last night I heard them talking. I understand their language a little bit and they were planning to run your boat on to the reef and then kill you all and rob the ship.”

Florence Young listened attentively, beginning to realise why she had been kept awake during the night to pray.

Charlie continued, “Miss Young, last night God spoke to me and said, “Charlie, you go on board and look after Miss Young. And take your friend Johnny with you.”

“Charlie, I’m very grateful to you. Yes, we’ll sign you on as crew as well as Johnny.” Both these were ‘mountain men’ with no knowledge of the sea, but they were trustworthy men who would take care of the mission party.

The trip down the east coast of Malaita was cancelled and the *Daphne* set sail for Gavutu with all five missionaries lying in the open boat suffering from malaria, exposed to the burning tropical sun. The winds were very light, or non-existent, so several times they were becalmed and lay rocking helplessly on the flat sea. The nightmare trip ended at last and they were never happier to land on shore at Gavutu. They spent several weeks there recovering and waiting for a ship to take Florence and Mrs. Fricke back to Australia. When it finally came, the ship’s doctor also ordered Mr. Thomas back home as he was too ill to stay.

The remaining two men began to plan how they would establish centres on the island, but they struck unexpected difficulties from the local people. Those who had spent time in Queensland had seen how the white man had taken Australian Aboriginal land without their consent and claimed it for their own. They were afraid they would be treated the same way, so it took many months of negotiating with Peter and other tribal elders before they were able to put up bush material buildings at Malu’u for residence and for school and worship.

Next was Nongosila on the east coast of Malaita and a year after it had arrived at Gavutu, the pre-fabricated building was brought to One Pusu on the south west coast and erected there as part of the head station for the mission, chosen for its convenient central position.

Peter paused one day as he climbed the steep hill. Now there were steps carved into the hillside and a road for easier access to the Christian village. All of this work had been done by the willing helpers at the village. He looked up the hill and could see the buildings erected in recent months. Nearby were the food gardens with healthy looking crops promising a good harvest. Around the houses were fruit trees and brightly coloured plants, all reflecting the joy and happiness of the residents.

“What a long way we’ve come,” Peter thought as his mind went back to his solitary existence on the beach, the many times his life had been threatened, the times when food was scarce. But then he remembered too the goodness of his God who had delivered him out of all his troubles, had provided food miraculously, and had saved his life many times. He thought of the numbers of people who had become Christians and been baptised in recent years. Then there were the eleven young trainees who had recently gone to One Pusu to share in the task of setting up the new station there.

“My God,” prayed Peter, “You have done so many good things. Thank You for all your great mercies and goodness.”

Adapted from:

*Pearls from the Pacific*, Florence S.H.Young, Marshall Bros., London

*Fire in the Islands*, Alison Griffiths, Harold Shaw Pub.,Wheaton, Illinois,

*Footsteps in the Sea*, John Garret, Institute of Pacific Studies, U.S.P., Suva, Fiji

## Ants 1

### Ants teach us to plan for the future

#### Story: The Ant and the Grasshopper

#### Student activities

A grasshopper was sitting in the sun singing. Nearby an ant was struggling along carrying a grain of wheat.

"Isn't it a beautiful day?" sang the grasshopper. "Why don't you sing like me?"

"I'm too busy," muttered the ant as he scurried along.

"What are you too busy about?" asked the grasshopper.

"I'm getting ready for the winter, when there will be no food about," replied the ant. Then off he went to fetch some more food.

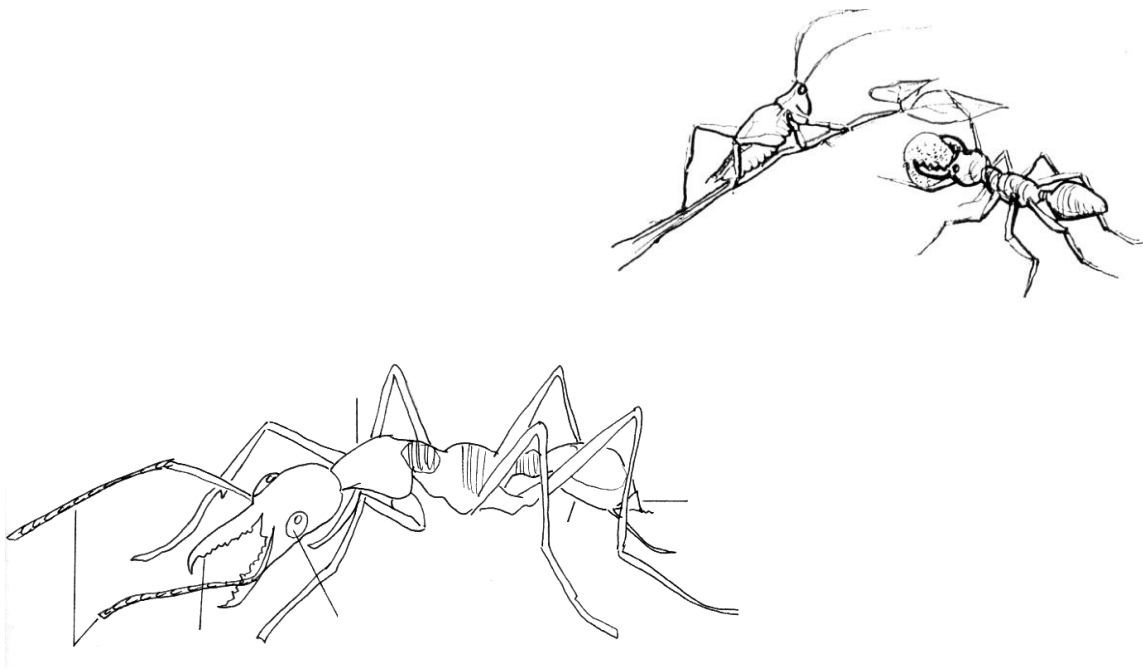
"Well, I think you're silly," said the grasshopper as the ant returned with another grain. "As long as the sun shines I shall go on singing."

When the winter came the ant had plenty to eat but the grasshopper had nothing.

Ants, like many other creatures, prepare for the future by storing up food. They are wise little creatures because they work hard and think ahead. God says that people should learn a lesson from the ant. People can be prepared for the future by following Jesus. Then, no matter what happens in the future God will be with them. Christians can prepare for the future by storing God's word in their hearts.

#### Write this Bible passage:

Proverbs 6:6-8



## Ants 2

### Ants live in colonies

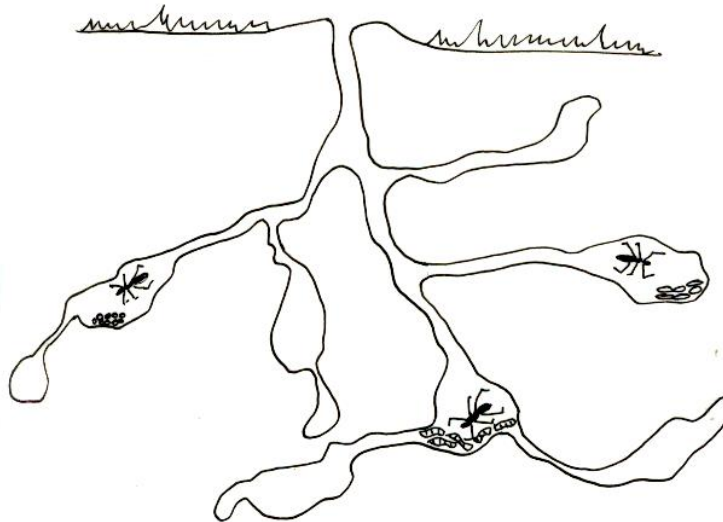
Ants are called *social* insects because they never live alone. They live in family groups called *colonies*. In one ant colony there may be several thousand ants all living together in an underground nest. The nest usually has long passages leading to chambers used for rearing the young and storing food.

In an ant colony, everything is carefully planned. There are different sections for different purposes. Here are some:

- royal quarters for the queen ant
- nurseries for the babies
- food quarters where tiny insects called aphids are kept
- mushroom gardens

The rooms are built at different levels and have different degrees of warmth and dampness. When ants first hatch out of their eggs, they are little wriggly grubs called *larvae*. As these "babies" need to be kept damp to stop their skins drying out, they are kept in a damp room. However the eggs must be kept in a warm room, but not too warm, so the worker ants move the eggs to a room further underground if it is a hot day, or move them to a room closer to the surface if it is a cold day.

**Draw an ant colony and write the functions of the rooms.**



## **Ants 3**

### **Ants teach us about wisdom**

A job that has to be done in the ant colony is garbage disposal. Each worker ant is busy keeping the nest clean, taking the rubbish to the garbage tip. Ants are very wise when it comes to looking after rubbish. It is a shame that people are not so wise about their rubbish!

The ant colony is so carefully planned. Only a wonderfully wise Creator could have made the ant to be so organized. It could not have happened by accident. God has made His creatures in such a way that we can learn from them. The ant teaches us about wisdom.

Wisdom is... *knowing the right thing to do, and doing it!*

The ant can teach us how wise it is to plan and organize. Wisdom is also thinking out the best way to do something. If you have a difficult job to do, then the best way to do it is to make a plan. Decide what you will do first, next, and so on. It is good to write down the steps for getting the job done.

Ants are intelligent builders. They are able to use all kinds of materials in making their colonies. They use earth, wood, leaves, packed mud and gravel. Perhaps their favourite home is beside a rock, where they can build many underground passages, with the rock acting as a roof.

1. What do ants do to keep their nest clean?
2. What does the careful planning of the ant colony teach us?
3. Think of a difficult job that you have to do. Make a plan for doing the job. Write down the steps.
4. What kind of materials do ants use for building homes?



## Ants 4

### Family Members

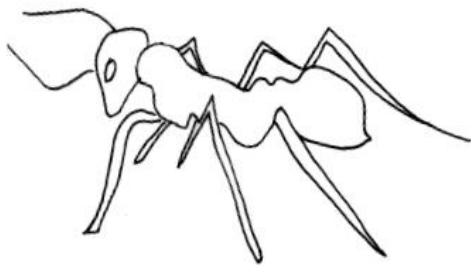
Most members of the colony are female. There may be thousands of females but only a few hundred males. The female ants are divided into different groups. There are workers, nurses, soldiers and a few queens and princesses.

#### **Workers, nurses and soldiers**

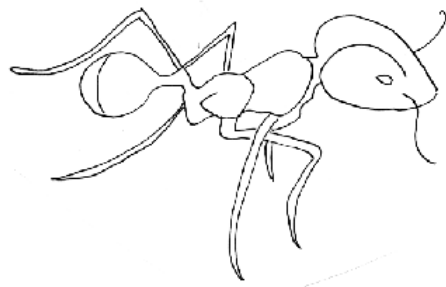
Worker ants are very busy. They look after the eggs and larvae, clean the nest, collect food and look after food storage. After the eggs have been laid by the queen, the workers take them and put them in the special chambers. The workers clean and feed the larvae. They guard the baby ants. Some of the workers repair the underground passages. Others go out and look for food. In some nests, workers open and close holes in the walls, to let more air in, or to block it out.

Nurses look after the sick or injured ants. Have you ever seen an ant carrying another ant back to the nest? The injured ants are cared for in a special hospital room.

Soldier ants can be very fierce. Some have long curved saw-toothed pincers, and a sting. They fight enemy ants from other colonies.



Worker ant



Soldier ant

**Draw the worker and the soldier. Using dot points list three facts for each.**

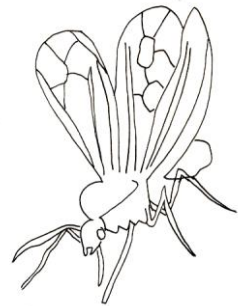
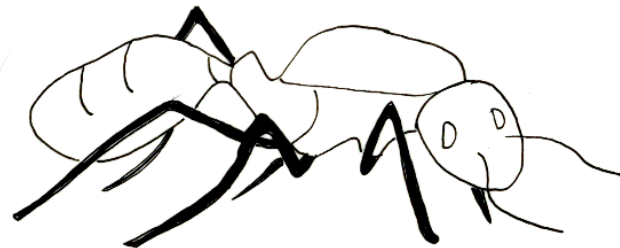
## Ants 5

### Queen ant and male ants

The queens and princesses, as well as all male ants are all part of the royal family! They do no work. They have everything done for them. They are fed, combed and cleaned. It is easy to pick them out from the workers, nurses and soldiers because they are the only ones with wings.

These royal ants do nothing but prepare for mating, which happens on one particular day. All the male ants make a special mating flight and mate with the queen ants. A few days after they have mated, the male ants die. The queens fly off and each one starts a new colony. The queen finds a sheltered place, digs a hole, creeps into it and seals it up with earth. Then after a few months the queen lays her eggs. The eggs are very tiny. When the eggs hatch out into larvae she feeds them with her own saliva. In her lifetime the queen will lay thousands of eggs. She will see her nest grow from a tiny hole to a large ant city.

1. Draw the male ant and queen ant and name them.
2. Which ants have wings?
3. What happens to the males after they have mated?
4. What does the queen do after she has mated?



## Ants 6

### The Larva and Pupa

The moment the eggs are laid, workers carry them away to a nursery, and lick them all over until they stick to one another. Then they can be carried around in groups instead of one at a time. After about three weeks the larvae hatch out of the eggs, and they are fed until they are big enough to become pupae. Then they spin a silk cocoon around themselves and stay in the cocoon for another three weeks.

Inside the cocoons they gradually change into ants. When it is time for them to come out of the cocoon the nurses cut a hole in each cocoon and take the cocoon off the ant very carefully. The nurse licks off the tight skin around the baby ant and helps straighten out the legs.

The baby ants are light in colour at first but gradually get darker. When the baby ants venture out of the nest, they have to learn their way home, by the position of the sun, as well as following the smell of other ants from the same nest. The greatest danger to baby ants is getting lost, or wandering into another enemy ant colony by accident.

1. What do the worker ants do with the eggs once they are laid?
2. How do the baby ants get out of the cocoon?
3. What is the greatest danger to a baby ant?



## Ants 7

### Life cycle

Draw four pictures to show the story of how the ant develops from the egg stage to the pupae. Write a description under each drawing.

*Picture 1 The eggs* - These are laid by the queen.

*Picture 2 The larvae* - These are the hairy little grubs which hatch out of the eggs. They feed on the queen's saliva.

*Picture 3 The cocoon* - When the larva is fully grown it spins a cocoon. Inside, the larva changes into a pupa.

*Picture 4 The pupae* - These are the tiny ants that hatch out of the cocoon.



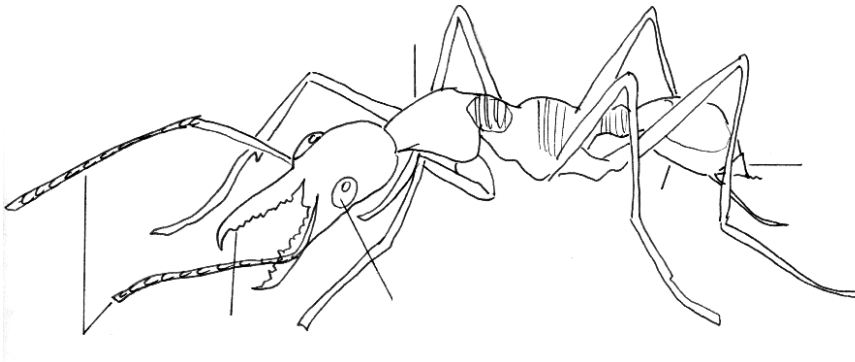
## Ants 8

### An ant's body

- Ants are insects. This means they have six legs.
- An ant's body has three parts.
- The abdomen is separate from the head and body. It has a distinct waist.
- Ants have *feelers* or *antennae* with a sharp bend in the middle.
- Ants have large jaws called *mandibles*, with tiny teeth, which are used in cutting.
- Male ants have two pairs of wings. Workers and soldiers do not have wings.
- Some ants have stings.
- Some worker ants can chase off intruders by squirting acid at their enemy.

### Draw the ant and write name the parts:

- antennae
- jaws
- compound eye
- thorax (body part next to the head)
- abdomen (tail part)
- sting (on the tail)



## Bees 1

### Family members

Each hive has three kinds of bee:

#### 1. The queen bee

She is the biggest. There is only one queen in each nest.

#### 2. The drones

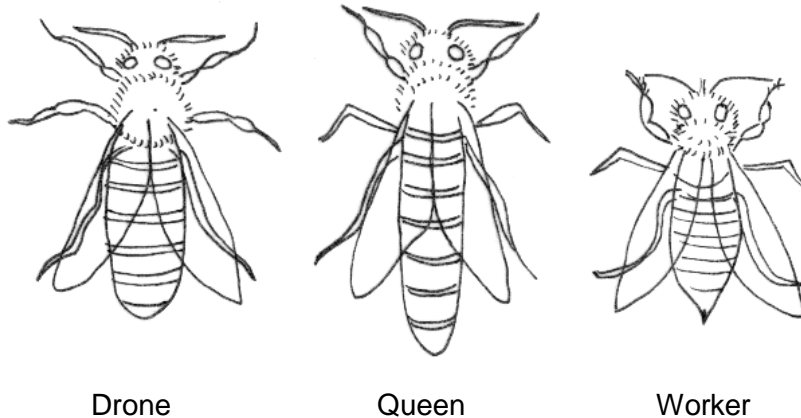
These are the males bees. They do no work at all. They are the next biggest.

#### 3. The worker bees

These are the smallest bees. They work very hard.

When people say, "*as busy as a bee*", they are talking about the worker bees who do so many jobs in the hive, including making the honey. Just like the ant community, the bee community is extremely well organized.

Draw and name the three types of bees in the hive.



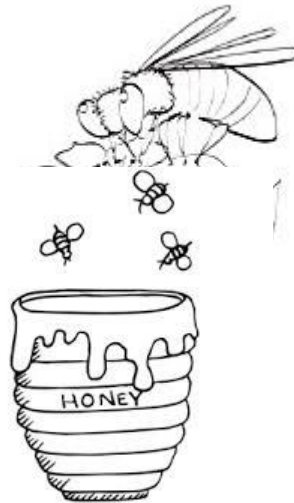
## Bees 2

### Bees help us

We can learn much from bees. We often say that a hard-working person is a 'busy bee'. Bees work hard to serve the members of the hive. They get food for each other and look after the babies.

Bees are servant insects. God has not only designed the worker bees to serve the hive, but they also serve us by pollinating the flowers. That means that they take pollen from one flower to another so that our fruit trees bear fruit. Bees also make delicious honey.

How do bees help each other in the hive?  
How do bees help us?



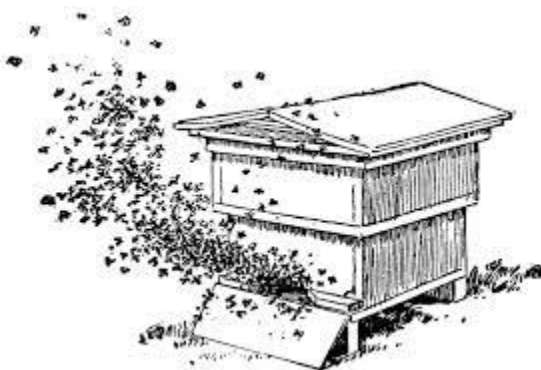
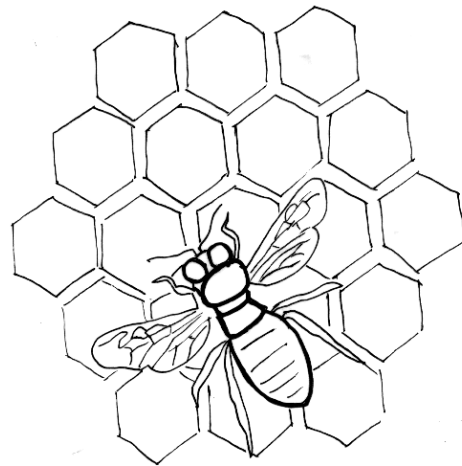
## Bees 3

### Bees work together and serve one another

In a bee community, everything runs in perfect order. Bees have no leader to tell them what to do. They just *know* what to do. God has given them instinct. This is a kind of wisdom which God gives to the animal kingdom. They just know the right thing to do and they do it.

God also gives people wisdom. We can find out the right thing to do from the Bible. However, not all people do the right thing! People can *choose* to be wise, or choose to be foolish.

1. Who do you know who is a hard worker?
2. Why is it good to be a hard worker?
3. God wants us to work to serve others. How can we work to serve God?
4. How does the worker bee teach us about serving?
5. How can we serve other people?





## **Bees 4**

### **Jobs of the worker bees: Builders**

The workers build six-sided wax cells. The six-sided cells, called hexagons, fit together like a jigsaw puzzle. The hexagon is stronger than any other shape. There are two layers of them. This is the honeycomb. The worker bees change the honey they eat into wax inside their body. They use the wax for building honeycomb. Many bees work together on one cell.

1. What is honeycomb made from?
2. How many layers are there?
3. What do worker bees eat?
4. What do they change the honey into?
5. What do they use the wax for?

## **Bees 5**

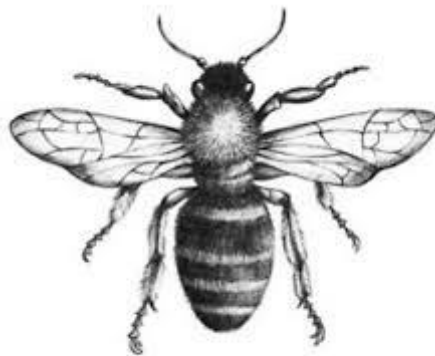
### **Jobs of the worker bees: Collecting pollen**

If bees did not take collect pollen, then we would have no fruit. God designed the bees to take the pollen from the male part of the flower to the female part, so that seeds can form. Fruit forms around the seeds.

This is how the bees take the pollen from one part of the flower to another:

On the bee's body there are lots of tiny hairs. The pollen grains get caught in these. A bee's body can become covered in pollen. The bee scrapes the pollen from his body to his back legs, where there are special long hairs to hold the pollen. When he has enough pollen he returns to the hive.

1. Why do flowers need pollen?
2. What do the pollen grains get caught in?
3. Why does the bee scrape the pollen from his back legs to his front legs?
4. What does the bee do when he has enough pollen?



## Bees 6

### Jobs of the worker bees: Collecting nectar

In sunny weather, worker bees collect nectar from deep inside the flowers. They use their long tongue to sip the sweet thick liquid. When a bee finds nectar it does a special 'honey dance'. The bee sways her body from side to side. This sends out signals to other bees, so that they know where to come and find the nectar. Bees do not just care for themselves. They work together and help one another.

Honey bees only visit the flowers that are easy to get pollen from. Blossom is a good shape for the bee to sip nectar from. The colour and scent of the flower helps the bee to find the right one.

1. When do bees like to collect nectar?
2. What is nectar?
3. How does a bee let another bee know when it has found nectar?
4. How does a bee find the best flowers for nectar?



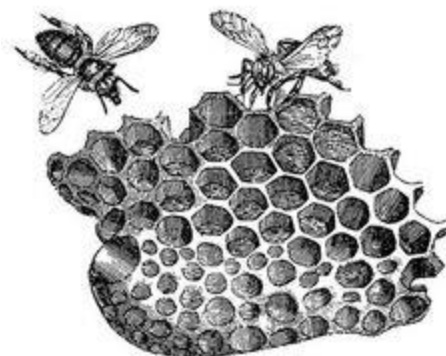
## Bees 7

### Jobs of the worker bees: Making honey

Bees carry the nectar back to the hive in a 'honey stomach'. While they are carrying the nectar, certain chemicals in their bodies start changing it into honey. Once they are back at the hive, they squeeze the nectar out of the honey stomach and pass it on to other worker bees. These bees pack it into the honeycomb. Honeycomb cells are six-sided (hexagons). When a cell is quite full, one of the workers closes it up with a little wax lid, keeping the honey air-tight.

The pollen is packed into other cells, and mixed with a little honey to make a kind of bread, which is used as food for the colony.

1. How do bees carry nectar back to the hive?
2. What happens to the nectar inside the bee's honey stomach?
3. What happens when the bee gets back to the hive?
4. Draw a honeycomb. Make sure the cells are six-sided.



## Bees 8

### Jobs of the worker bees House Keepers

Some worker bees work at cleaning the hive. They crawl over the floor and carry out any dirt or dead bees in their jaws.

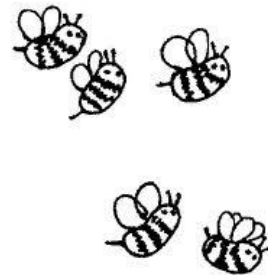
How do worker bees carry out the dirt and dead bees?

### Nurses

The nurse bees look after the baby bees. The nurse bees feed the little grubs called *larvae*. They run around from cell to cell, making sure that each tiny larva is all right and that it has enough to eat.

For three days all the larvae live on *royal jelly*. Then the nurse bees feed most of them with nectar and pollen which they have collected from flowers. The pollen and nectar have been stored in the cells as *bee bread*. The queen bees are not given bee bread. They keep eating royal jelly so that they grow into queens.

1. What do the nurse bees do?
2. What is royal jelly?
3. What do larvae eat after three days?
4. What do queen bees eat all the time?



## Bees 9

### Jobs of the worker bees Air Conditioners

Near the doorway of the hive stand bees that make a humming sound, but not because they are angry. They make the noise with their wings. They fan their wings very fast. This keeps the air moving and cools the hive in hot weather. It stops the honey from getting too soft and runny.

1. Why do some bees make a humming sound with their wings?
2. Why does honey need to be kept cool?

### Armed Guards

The armed guards stand at the entrance of the bee hive. Bees have to pass the guards to get into the hive. The guards are armed with stings. They only let in the bees that belong to their hive. They know which ones belong because of their smell. They drive away any robber bees that may come from other colonies to steal honey.

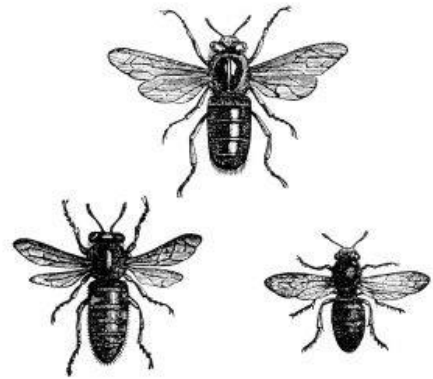
1. Where do the guards stand?
2. What is their weapon?
3. Who do the guards let into the hive?
4. Who do they keep away?

## Bees 10

### The Drones

The drones are very sleepy and do no work at all. They cannot gather nectar because their tongues are too short. They have no pollen baskets for gathering pollen and they have no stings. The drones are very noisy, and buzz a lot. The purpose of the drones is to mate with the new queen so that she can lay eggs. After the drones have mated with the queen, they are usually thrown out of the hive because they are useless, and only extra mouths to feed.

1. Why aren't the drones very useful?
2. Can drones sting?
3. What is the purpose of the drones in the hive?



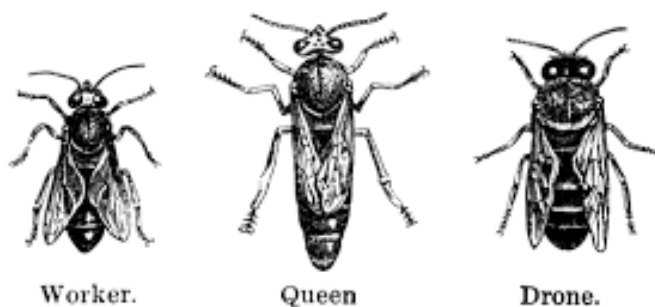
## Bees 11

### The Queen Bee

The queen is the most important bee in the hive. The other bees honour her and give her full attention throughout her life. She is surrounded and protected. She becomes a queen because she is fed on a special food called royal jelly. This makes her longer, bigger and shinier than the other bees. She is fed by the worker bees, who also comb the fur on her body.

A queen starts laying eggs once she has mated with a drone. The queen lays her eggs in the wax cells. She lays two kinds of eggs. One kind of egg will grow into workers and the other kind will grow into drones.

1. What does the queen look like?
2. Who looks after the queen?
3. What special attention does she receive?
4. Where does the queen lay her eggs?
5. What are the two kinds of eggs that the queen lays?

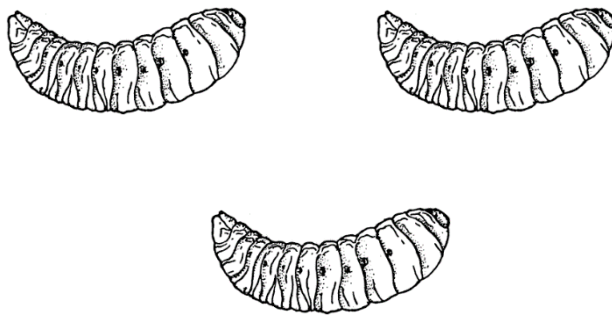


## Bees 12

### The larvae

The eggs hatch into small white grubs. These are called *larvae*. The nurse bees feed them on pollen and honey. After five days, they have developed into tiny bees called *pupae*. They stay in the cells for another thirteen days. Then they bite their way out of cell, by biting through the wax which covers the cell.

1. What are the *larvae*?
2. Who looks after them?
3. What is the total amount of time they stay in the cell after hatching?
4. How do they get out of the cell?

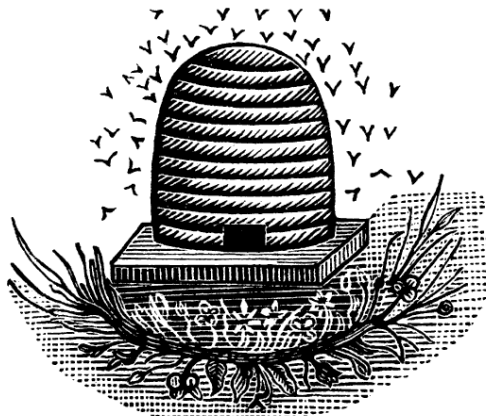


## Bees 13

### The swarm

When there are too many bees in the hive, the old queen leaves, taking many worker bees with her. Some of the worker bees scout for a new home. The swarm gathers together in a cluster on a branch before they move into their new home.

1. What happens when there are too many bees in a hive?
2. What does it mean to *scout* for a new home?
3. What does a *cluster* mean?



## Bees 14

### A bee's head

The head has five amazing eyes: two large ones and three small ones. As well as being able to see in all directions at once, she can see the earth and the sky at the same time. The eyes also let light through in an amazing way. Bees can see many different patterns of white, grey and black, and can actually *read* her way to flowers and back to the hive again. Because of her amazing eyes, the bee has a wonderful sense of direction.

The head also has feelers, to feel and smell. Bees also have a mouth with strong jaws for chewing and a long tongue for sipping nectar.



1. How many eyes does a bee have?
2. What is so amazing about the bee's eyes?

## Bees 15

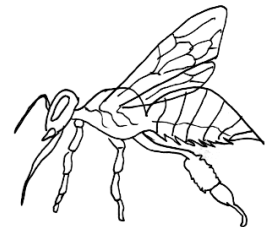
### A bee's body

A bee is an insect. This means it has six legs. Its body is divided into three parts: the head, the thorax and the abdomen. Draw a bee and label the parts.

The thorax is the middle part of the body. It has four thin wings. There are two on each side and they can move four times a second. The tail part is the abdomen. This is the biggest part. It has a honey sac where it stores nectar.

Worker bees have stings on their tails. The sting has two spears which are joined to a red, egg-shaped bag which holds poison. Each spear has barbs on the end. These are like fish hooks. These make it very hard to pull out of the flesh. Sometimes the bee has to leave them there in order to get away. When she does this, she dies. Worker bees can usually get their stings out of other bees, but not out of a human being's skin.

1. To which part of the body are the four wings attached?
2. What is so amazing about the wings?
3. What is stored in the abdomen?
4. Which members of the bee family have stings?
5. What is the sting like? What happens if the bee loses her sting?



## Bees 16

### The dance of the bees

When a bee goes out looking for nectar it performs a "dance" which sends signals back to the other bees to come and get the food. They get electrical charges on their body while flying and can send out electric signals by their dance.

A bee can fly away from the hive for about 8 km and find its way back. But if they fly this far they get too tired to work. Usually they fly about 2 km (1.24 miles) from their hive looking for food.

Bees have favourite flowers for nectar: Their favourite colours are blue and yellow.



1. How does a bee tell other bees that they have found food?
2. What does this show us about God the Creator?
3. Write an amazing fact about a bee that is far away from home?
4. What colours do bees like?
5. Draw either a bee dance, or a bee on one of its favourite flower.