

Experience the  
**Wonders of Nature**  
with Gardens by the Bay

# LETTERS TO DAVID

David is a botanist who has been working at Gardens by the Bay since it opened!

Being a nature enthusiast who is part of a global conservation group, he regularly updates his group mates about fascinating plants and exciting discoveries at the Gardens.

Join David in a series of letters to his friends and begin your adventure with nature!

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# 01

## Letters to David: Succulents

Learn more about the desert environment  
and the amazing plants that live there,  
through the exchange between  
David and his friend, Nick.

Dear David,

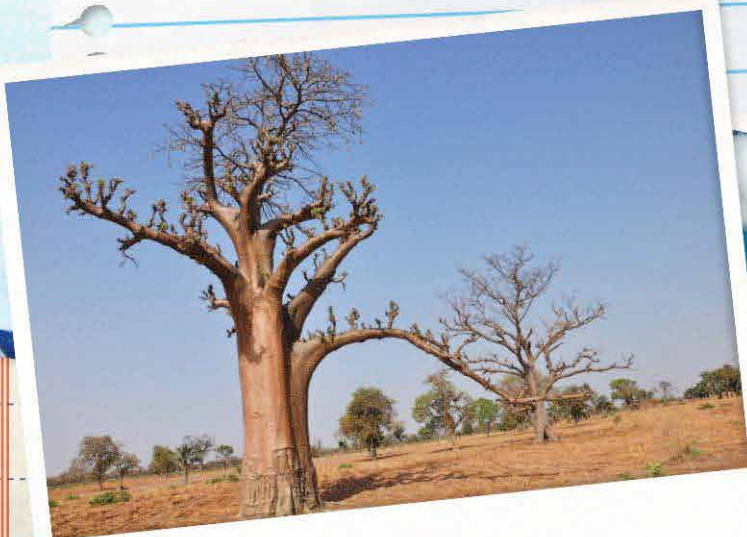
The deserts in Africa are AMAZING!

The weather here is very dry, and every year there is a dry season that lasts more than 6 months. Oh boy! Half a year without rain. You wonder how the plants do it. Plants that grow in the desert have special places to store the water from one rainy season to the next. They are called succulents. The African Baobab has a large trunk full of water. Everywhere I found plants with juicy leaves, juicy stems, all 'saving for a rainy day'!

While I was there, I could not resist visiting Madagascar. What an incredible island! I am writing to you from its capital city. While here, I saw the Clubfoot Tree. Its flowers look just like one of our Frangipani trees, but its fat trunk is covered in spines to avoid being nibbled at by hungry animals. Ouch!

I am sending you some photos. Enjoy!

Your friend,  
Nick





Dear Nick,

So good to hear from you! South Africa sounds like a place I should visit!

I loved the photos of the water-storing plants you sent! But, my friend, I think you forgot to write the names of the plants on the photos. I have no idea what plants these are and where they are from! Did you mix them up with plants from other places? Some of these plants really do not look like they are from Africa!

It would be so helpful if you could label the plants in your next letter! Here, I am sending the photos back to you in case they are your only copy.

Lovely to hear from you again! I'm looking forward to reading more stories of your adventures in the African continent!

Warmest Regards,  
David



Label the plants.



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# 02

## Letters to David: Plant or Animal?

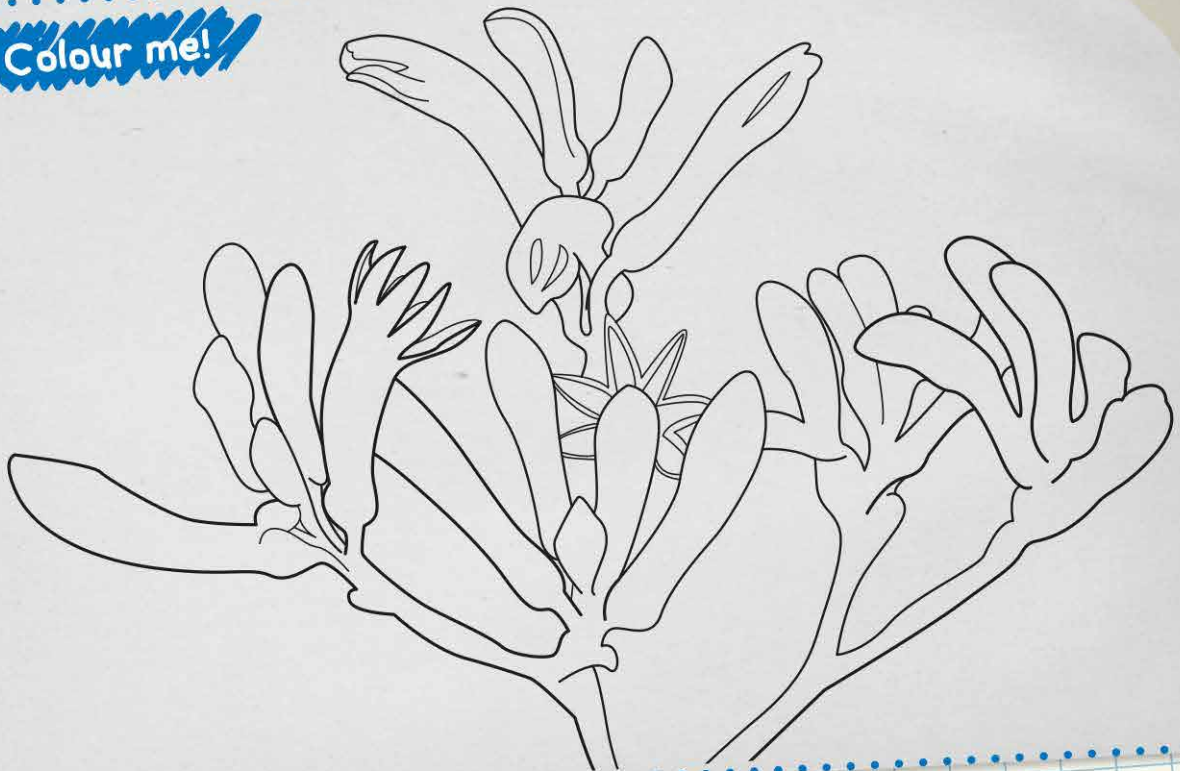
Discover fascinating stories behind  
these animal-themed plants,  
through the exchange between  
David and his friend, Anton.

Dear David,

How's it going mate?

I just bought a plant recently which I thought might interest you. I have sent you a sketch of it. It looks like something familiar, doesn't it? Make a guess!

**Colour me!**



That's right! It looks like an animal's paw! A kangaroo's paw to be exact! That must be why we call it the Kangaroo's Paw here down under. It comes in quite a few colours. I bought the red and yellow ones. It's a great garden plant. Maybe I can bring one for you when I visit next month.

I can't wait to catch up and hear about your trip to South America!

See you, mate!

Cheers,  
Anton



## Letters to David: Plant or Animal?

Dear Anton,

So good to hear from you, my friend! The Kangaroo's Paw sounds like a really fascinating plant! And I can't wait to see you next month too.

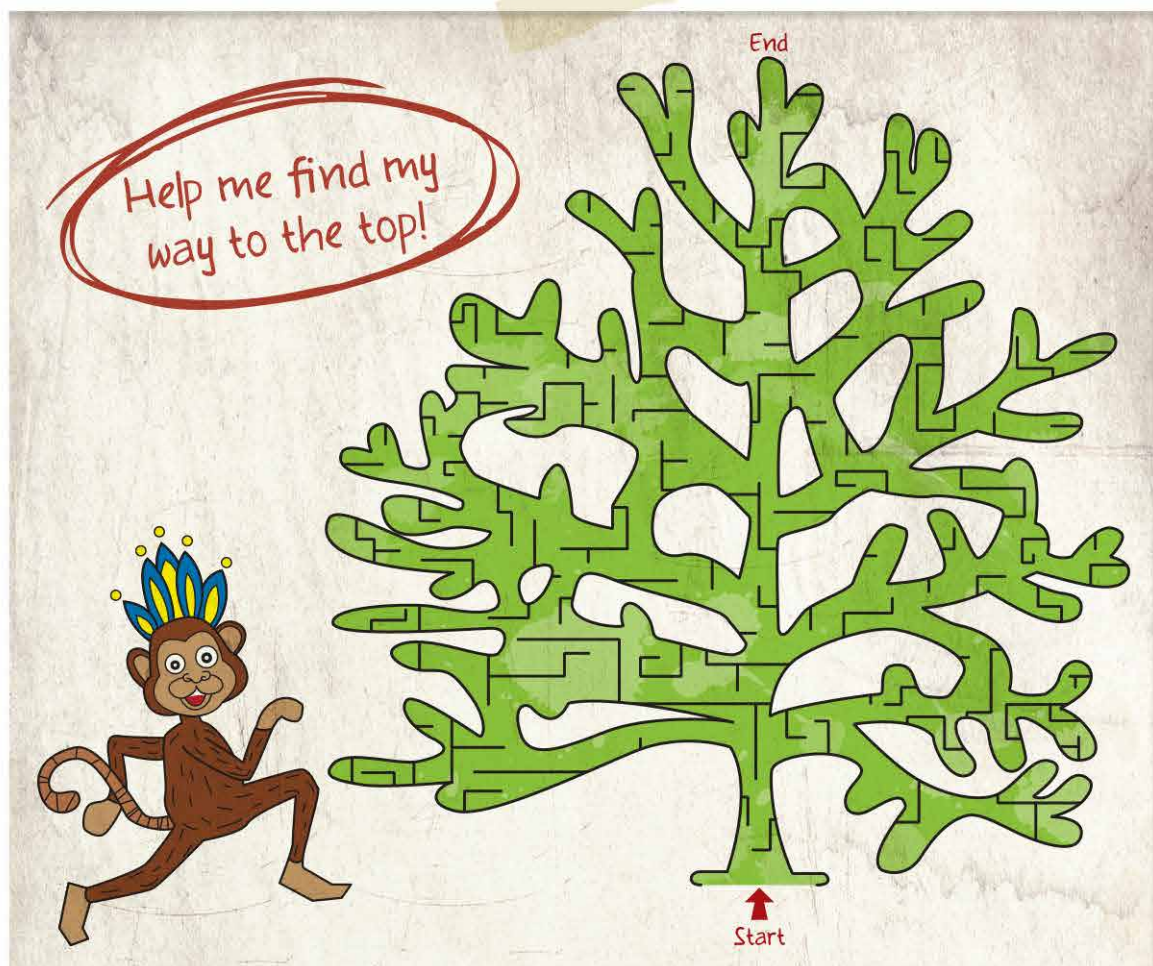
I had a wonderful time in South America. I saw so many different plants! I even had the chance to visit some ancient Aztec sites and saw some really old artefacts.

One in particular that really intrigued me, is this mysterious drawing I saw in an ancient parchment. It looks like a tree but what tree could it be? Is that a monkey in the corner? It looks like it is trying to climb the tree but doesn't know how! I wish I could **help the monkey find its way to the top!** This is so puzzling!

I have sent you a photograph of the parchment. Maybe you can make sense of what this drawing is about. I'm sure we shall have plenty to talk about when you visit!

Till then, take care my friend!

Warmest Regards,  
David



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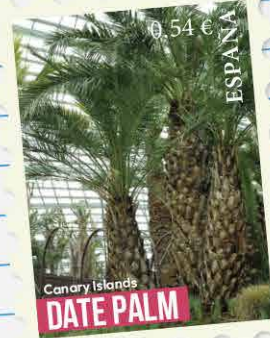
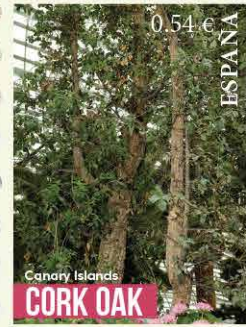
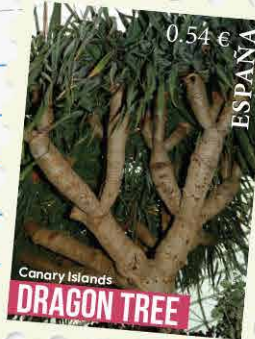
# 03

## Letters to David: Mediterranean Garden

Discover common Mediterranean plants,  
like the Olive Tree and Date Palm,  
through the exchange between  
David and his friend, Penny.



Fill in the blanks  
and pick the  
stamp with a  
palm on it!



## POST CARD

Dear Penny,

I am writing to you from the Canary Islands and it is lovely here in Spring. Did the shipment of Olive trees I sent earlier arrive safely?

I managed to buy many different types of palms for our M \_\_\_\_\_ Garden, such as the \_\_\_\_\_ Palm, and the \_\_\_\_\_ Date Palm. I can't wait for you to see them!

Perhaps we can go on a "date" when I'm back and I'll tell you more!

With Love,  
David



To: Ms. Precious Penny  
70 Cork Oak Lane  
Singapore 663620



Dear David,

I love the postcard you sent! I can't wait to see the palms planted in the Mediterranean Garden too!

The Olive trees arrived safely. We have just finished planting the thousand-year-old Olive tree! It is at the start of the Olive Terrace.

I was so surprised when I saw how tall some of the Olive trees were! I always thought that they were really short. I never knew they were only that way because the farmers prune them to harvest the fruit easily.

Thank you for the bottle of Olive oil you sent through Carlos. He taught me how to make the traditional Spanish dish, "Patatas a lo Pobre" (it means "poor man's potatoes") with it. I am sending you the recipe. I know you've probably had lots of it over there, but Carlos says this is his secret family recipe!

Counting the days till you are back!

Missing you,  
Penny

P.S. I would LOVE to go on a "date" with you.

## Patatas A Lo Pobre

### INGREDIENTS:

- 4 medium potatoes peeled
- 3 cloves garlic finely chopped
- 1 onion finely chopped
- 1 tablespoon fresh parsley finely chopped
- 3 tablespoons olive oil
- salt and pepper to taste

### DIRECTIONS:

1. Cut the potatoes into rough slices about 1/2 cm thick.
2. Heat the oil over medium-high heat. Add the onions and garlic and cook for about 5 minutes over medium heat.
3. Then, add the potatoes and cook over medium heat for about 20 minutes stirring occasionally until the potatoes are done.
4. Be careful not to cook on very high heat as this will brown the potatoes. Also, the potatoes will turn soft and mushy.
5. When done, remove from the heat and strain off the extra oil.
6. Put into a bowl and toss with the parsley. Add salt and pepper to your taste.



Enjoy!



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# 04

## Letters to David: Caves In The Clouds

Get ready to learn more about geological formations - stalactites and stalagmites, as well as some carnivorous plants, through the exchange between David and his friend, Andy.

Oh dear, the letter has been smudged! What do you think Andy is trying to tell David?

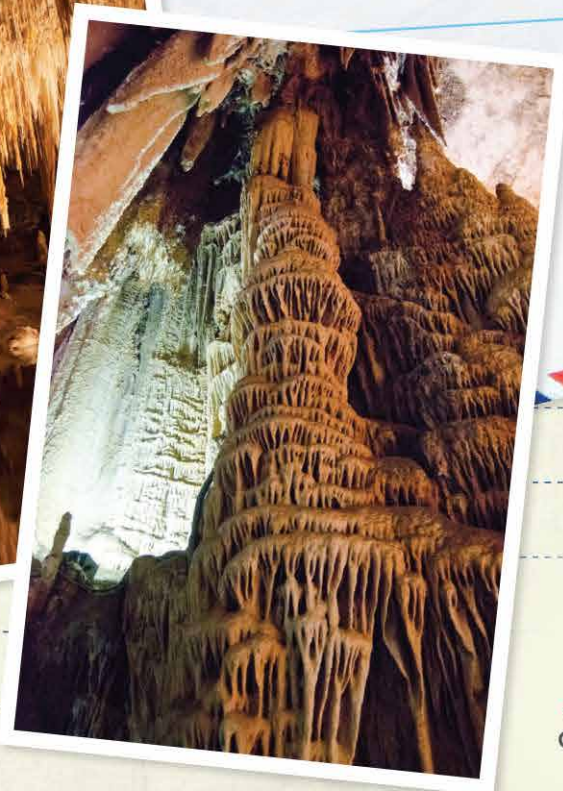
Greetings David,

Do not be alarmed when you see this picture. I have not been swallowed by a great monster. This is in fact a picture taken in a great c within a "Crystal Mountain".

It is truly an amazing sight! The entire place is filled with these large s that hang from the ceiling and with equally large s that seem to grow from the ground. Can you imagine how long it must have taken all the minerals to form these amazing structures?

David, you MUST see them for yourself!

Adventurously yours,  
Andy





# Letters to David: Caves in the Clouds

Dear Andy,

Oh my! I did get a shock when I saw your photos! You are right, the cave formations look spectacular!

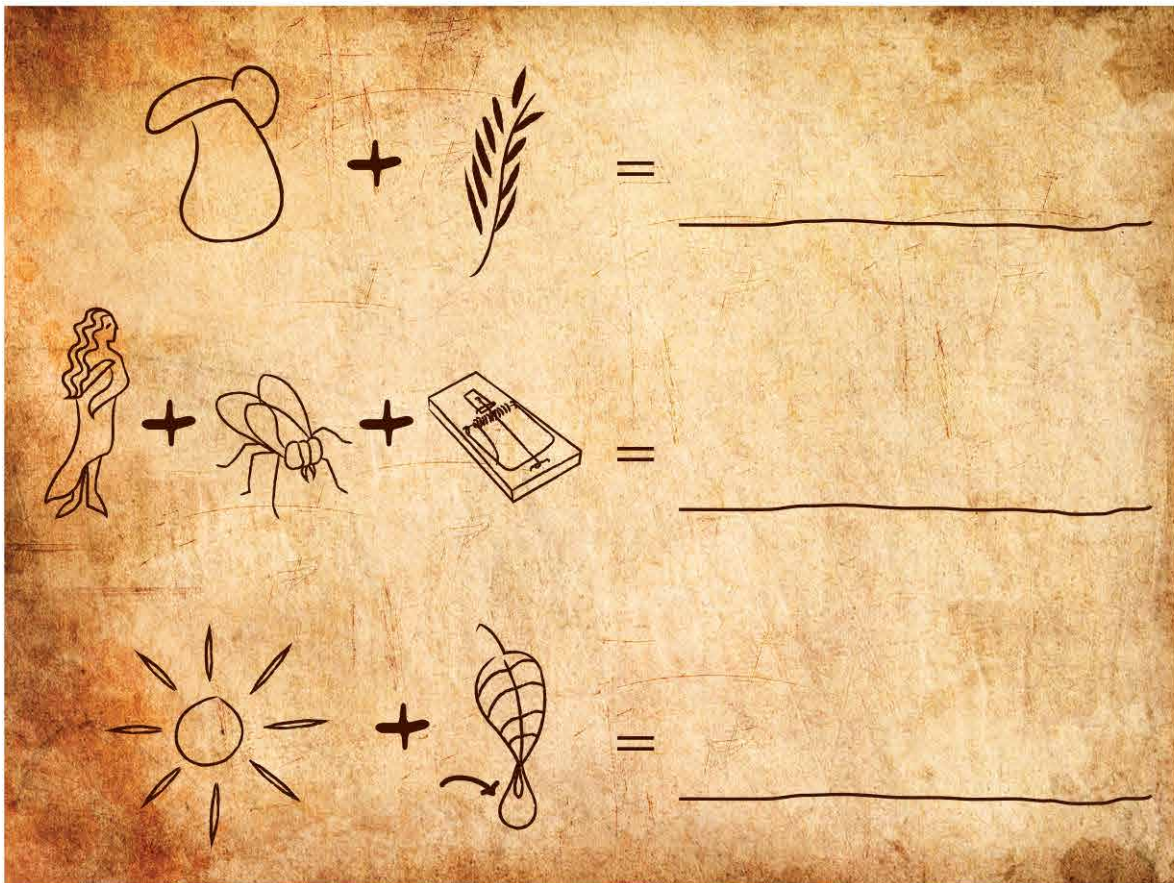
I have been doing some exploring of my own too. I was in Borneo last month looking for interesting plants we can place in the Cloud Forest. After weeks of hiking through the forests, we have finally made an amazing discovery!

We found these drawings in a cave. Judging by the images, I believe that these are clues that point to some sort of plant that eats living creatures!

If only I could **decode these pictures**. They may reveal the names of these plants!

Maybe you can help!

Warmest regards,  
David



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# 05

## Letters to David: Earth Check

Find out how climate change is affecting the environment and what you can do to protect the Earth, through a simple newspaper article and an entry in David's journal.



BONUS ACTIVITY!

# Garden Times

- April 2014 -

A BROADER LOOK AT TODAY'S NEWS

www.gardentimes.sg

## BREAKING NEWS!

The situation at the Arctic Circle worsens as temperatures continue to climb. Dubbed as the worst melt of the century, this summer proves to be a harrowing one for the bears of the Arctic Ocean.

Scientists calculate that if the temperature goes up five degrees by the end of the next century, we may lose our furry polar friends for good.



Polar bear seeking stable ground at the Arctic Circle.



**BONUS ACTIVITY!**

Dear Journal,

I have finally returned from my travels, only to find this awful, awful news waiting for me! I must be more careful in using water, energy and other resources around me from now on. I shall have to include a section in the Gardens that teaches everyone the importance of caring for the Earth. I shall call it... "Earth Check"! I will start by making a list of the things I can do to help protect the Earth!

My List of Things to Do to Protect the Earth!

- 1.
- 2.
- 3.
- 4.
- 5.



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# 06

## Letters to David: By The Water

Be intrigued by the plants and animals that can be spotted near the Kingfisher Lake and Dragonfly Lake, as you read the exchange between David and his friend, Anton.

Dear David,

It was so great hearing from you! Hope you solved the puzzling mystery of the parchment!

I have been reading wonderful things about the Gardens here in Australia! I even heard about how you have named one of your lakes after my favourite bird, the Kingfisher! I especially like the Collared Kingfisher (*Todiramphus chloris*). Did you know it gets its name from the white "collar" of feathers around its neck? I love how blue its feathers are, like the colour of the ocean on a hot summer's day. I can recognise its loud, distinctive call anywhere!

Here is a sketch I made of one I saw at the park the other day.

Do you have them at the Gardens too?

Your friend,  
Anton

Colour me!





# Letters to David: By the Water

Dear Anton,

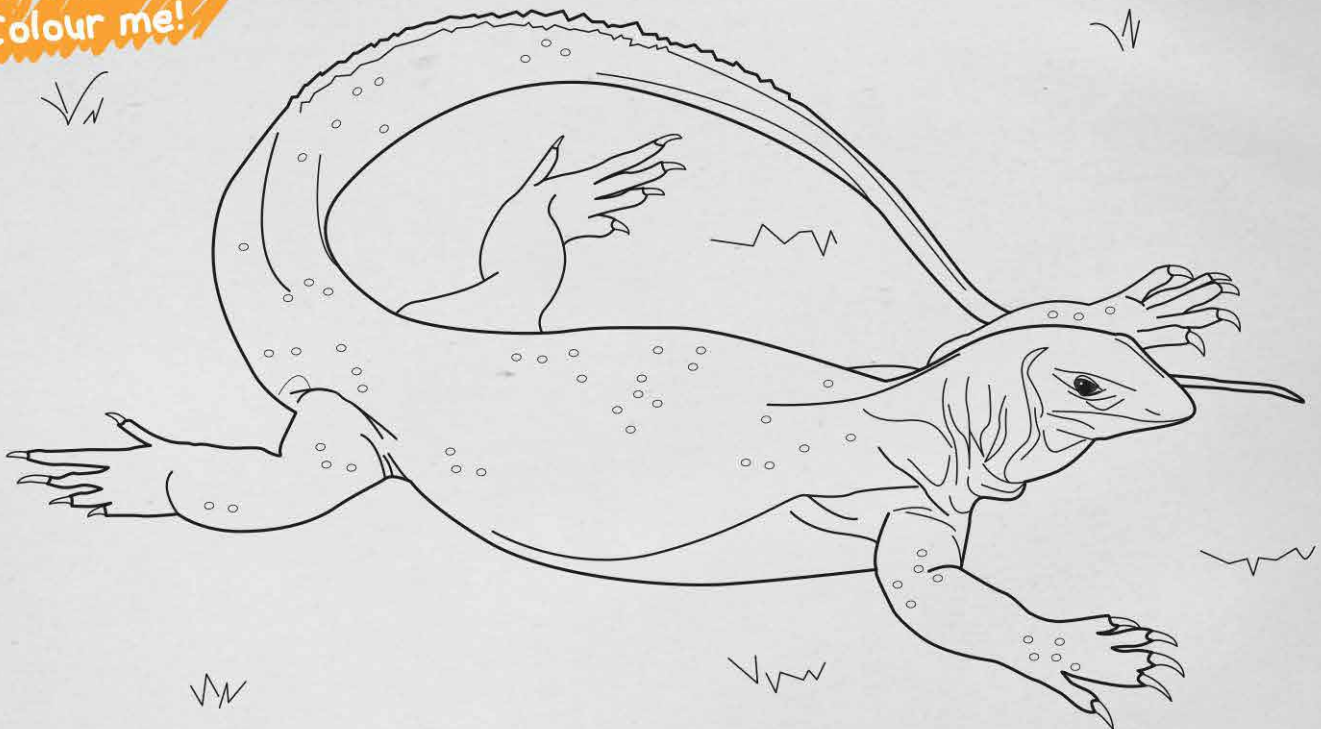
Yes! The Collared Kingfisher is a regular visitor at the Gardens! How nice to know you have them there too!

You know what else has been spotted near the Kingfisher Lake? The Malayan Water Monitor Lizard (*Varanus salvator*)! Have you ever seen one of these magnificent creatures? They are huge! Native to Asia, this lizard can grow up to 3 metres in length! Despite its size, it is an agile climber. In fact, young lizards often hide in trees to avoid predators. I have heard from some of the older folks that its flesh is used in the preparation of traditional medicinal remedies.

Here is a sketch I made of it. Can't wait for you to see it in person! Speaking of which, when are you going to visit me?

Warmest regards,  
David

Colour me!





# Letters to David: By the Water

Dear David,

Greetings from the "Sunshine State"! We're having a really hot summer this year. We should be called the "Sunburn State"! Our climate is really changing. That's not a good sign.

You were checking with me about one of our native plants, the Alligator Flag (*Thalia geniculata*). Often found growing in ponds or along waterbanks, it grows well in wet ground over here. I have been told it is called "Alligator Flag" because some people believe that the plant can alert people to the presence of a passing alligator by observing the rustling of its leaves. Also, the plant's complex root system gives alligators a perfect hiding place. Did you know it's considered an invasive weed here? It's interesting how it is an ornamental plant in your Gardens! But, you are right! It does have lovely flowers.

I am sending you a sketch to see if this is the plant you are talking about.

It's really great hearing from you again. Do keep in touch!

Your friend,  
Martha

Colour me!





# Letters to David: By the Water

Dear Martha,

It is great hearing from you too.

Yes! This is the Alligator Flag we have here. It is thriving in our Gardens. We have plants from all over the world here. Some of these plants are species that have been growing in Singapore for so many years, they might as well be a local plant! One of them is the Traveller's Palm (*Ravenala madagascariensis*).

Contrary to its name, the Traveller's Palm is not a true palm, but is related to the Bird of Paradise. It gets its name from the common belief that travellers can drink the water collected in the cup-like leaf bases during an emergency. But actually, the water is quite smelly and dirty and could make you sick if you drank it! We grow them here along the Dragonfly Lake. Here's a sketch I did of the Traveller's Palm.

Will try to send you some photos of the Gardens soon!

Warmest regards,

David

Colour me!



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# 07

## Letters to David: Right At Home

Gain a deeper understanding about common plants and animals that can be found in Singapore and at the Gardens, through the exchanges between David and his friends, Keng and Tim.



Dear David,

Thank you for asking me along on the fauna survey last week. I learnt many things!

The most amazing thing happened this week! I noticed a Yellow-vented Bulbul (*Pycnonotus goiavier*) "hanging out" at my balcony for a while now and yesterday, I discovered that it and its partner had built a nest in one of my houseplants! I did some reading and found out that the local Bulbuls have become so used to humans that they sometimes build their nests in heavily populated areas, including the balconies of flats! I remember you telling me during the survey that the Yellow-vented Bulbul is fond of fruits and berries but also eats nectar and insects so I have been leaving out small bits of fruit for it.

I did a sketch of them. I can't wait to see the baby birds when they hatch!

Your friend,  
Keng

Colour me!





Dear Keng,

Congratulations, Granddad Bulbul! It was a pleasure having you on the fauna survey.

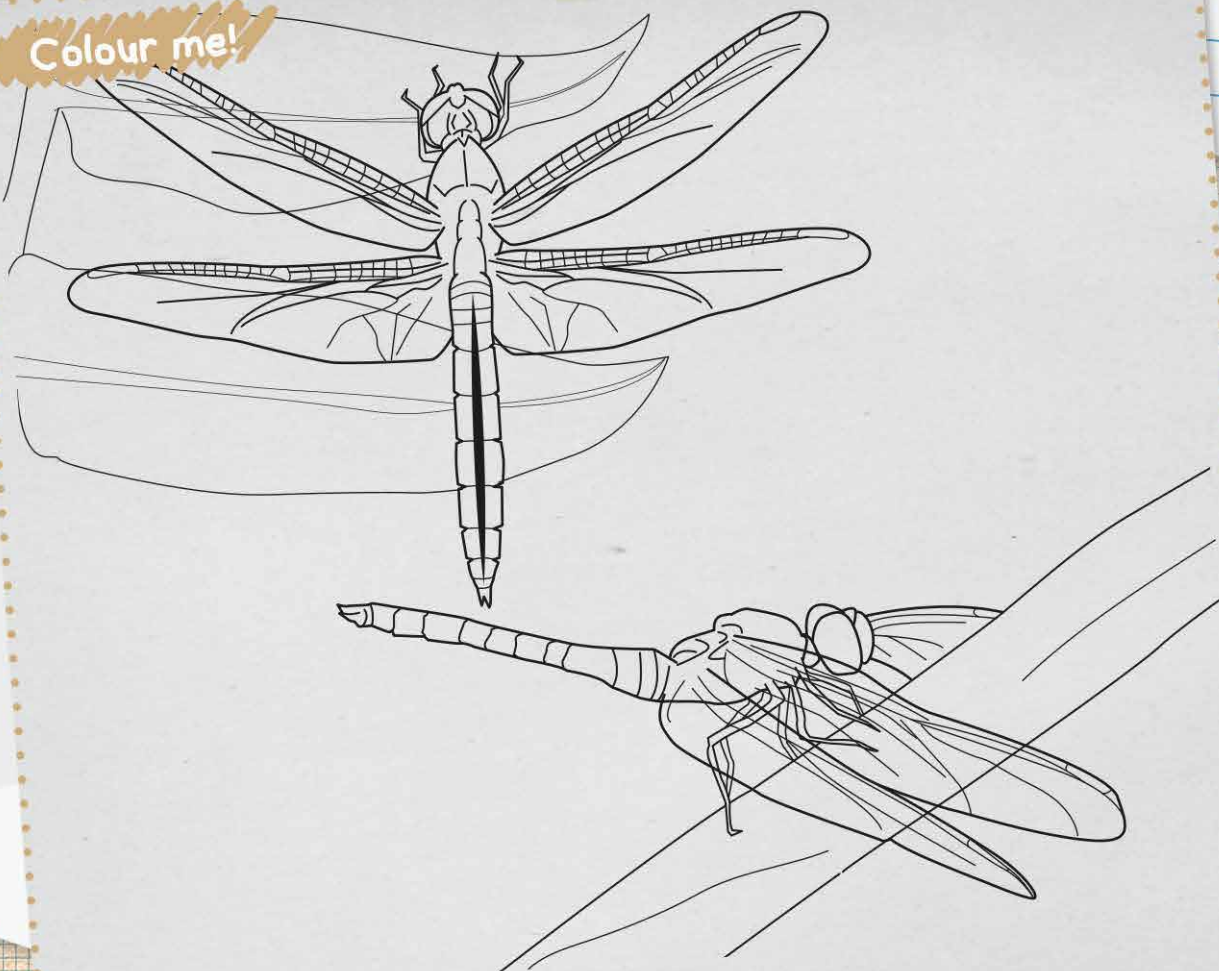
You asked me about the **Common Scarlet** (*Crocothemis servilia*) that day and I told you how the Gardens by the Bay logo was inspired by this dragonfly. Native to Southeast Asia, the Common Scarlet is often spotted around the Dragonfly Lake, especially around the area of the Dragonfly Bridge. Did you know that despite its name, only the male Common Scarlet is red? The female is actually bright yellow!

We weren't able to see the dragonfly up close that day, so I am sending you a drawing of it.

We're having another survey next month. Join us if you can!

Warmest regards,  
David

Colour me!





Dear David,

How have you been? Was just at the Gardens last week but I didn't manage to catch you. Hope you are well.

The Outdoor Gardens are really coming along very nicely! I am so glad to see that your Orchids are doing well! We've been trying to re-introduce more native Orchids to our surroundings by planting them at suitable locations, such as our roadside trees, in parks and nature areas.

One of them is the Tiger Orchid (*Grammatophyllum speciosum*) and it is the largest orchid in the world. A single plant can weigh up to 1 tonne! They don't often bloom but when they do, the flowering stems can grow up to 2.5 metres long! So, I was quite excited when I saw them at your Supertree Grove and other parts of the Outdoor Gardens! I even made a sketch of it here.

I would love to get regular updates from you about the progress of the Gardens!

Your friend,  
Tim

Colour me!





Dear Tim,

I have been busy but well. Yes, our Tiger Orchids are doing well! We've even had a flowering recently!

Our Tiger Orchids are not the only large epiphytes that are flourishing here. You should take a look at our **Staghorn Ferns** (*Platycerium* sp.)! We have at least three species growing at our Supertree Grove alone. Named for their elk horn-shaped leaves, I like how this fern has 2 different types of leaves (or fronds); one for trapping nutrients and the other for carrying the spores that allow the fern to reproduce.

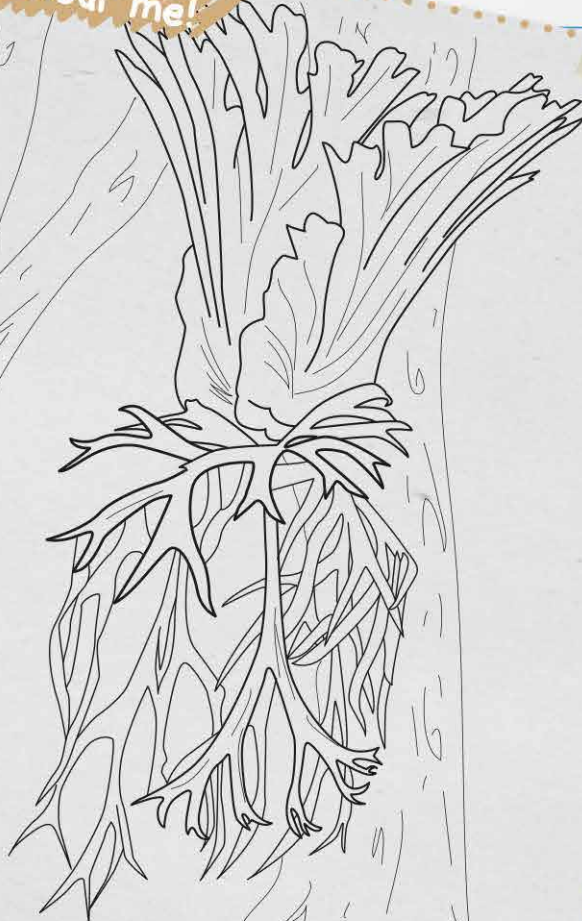
Here's a sketch too.

Epiphytes are so fascinating, don't you agree? They grow on other plants and get their moisture and nutrients from the air around them but not from the plants on which they grow ... how clever!

We really should meet up soon and trade notes! How about next Tuesday? Till then, take care!

Warm regards,  
David

Colour me!





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# 08

## Letters to David: Flutter / Fascinating Trees

Journey into the World of Plants as you read David's exchanges between his friend, Meng, who works in the nature reserve, and Noel, a passionate student who is fascinated by the Cannonball Tree.



To: meng@sreserve.org.sg

From: education@gardensbythebay.com.sg

Subject: Flutter

Dear Meng,

How is life at the reserve? Our outdoor gardens have been growing out very nicely. And guess what? The animals have been slowly, but surely returning to this area now that the plants have established themselves.

Recently, we have had more and more sightings of butterflies. Just the other day, I saw a **Plain Tiger (*Danaus chrysippus*)**. I'd read that when attacked, the butterfly sometimes fakes its own death by secreting a foul-tasting liquid, causing its predator to release it. Some other butterflies "mimic" the wing pattern of the Plain Tiger to trick predators into thinking that they are poisonous too. Animals are really clever, don't you think?

Here's a picture of the Plain Tiger I saw. Am sending you one of the caterpillar as well. I saw it in this book I was reading.

Looking forward to learning more about our local butterflies at the reserve this Saturday! It will really help me with our fauna surveys here.

Warmest regards,  
David



Attachments: [plain\\_tiger.jpg](#)  
[plain\\_tiger2.jpg](#)





To: education@gardensbythebay.com.sg

From: meng@sreserve.org.sg

Subject: Re: Flutter



Dear David,

Thank you for the pictures of the Plain Tiger! Things are good here. There has been more rain recently, which is good for our epiphytic ferns.

So happy to hear that the Plain Tiger is at the Gardens. Have you spotted any **Painted Jezebels (*Delias hyparete metarete*)**? They are one of my favourites! They have such beautiful wings ... It's hard to believe that this brilliantly coloured butterfly is actually poisonous and the bright colours serve as a warning to would-be predators! We usually see them around our treetops here, coming down only to feed. Did you know the host plant for its caterpillars, the Common Malayan Mistletoe (*Dendrophthoe pentandra*), is a parasite to trees? So, in their own way, these butterflies are helping to keep our ecosystem in check.

You are right, David! Animals are amazing! Here's a picture I found of the Painted Jezebel and its larva.

Looking forward to Saturday too!

Best regards,  
Meng



Attachment: painted\_jezebel.jpg



# Letters to David: Fascinating Trees

Dear Mr David,

My name is Noel. I am in Primary 5 this year. I am doing a school project about fascinating trees around the world.

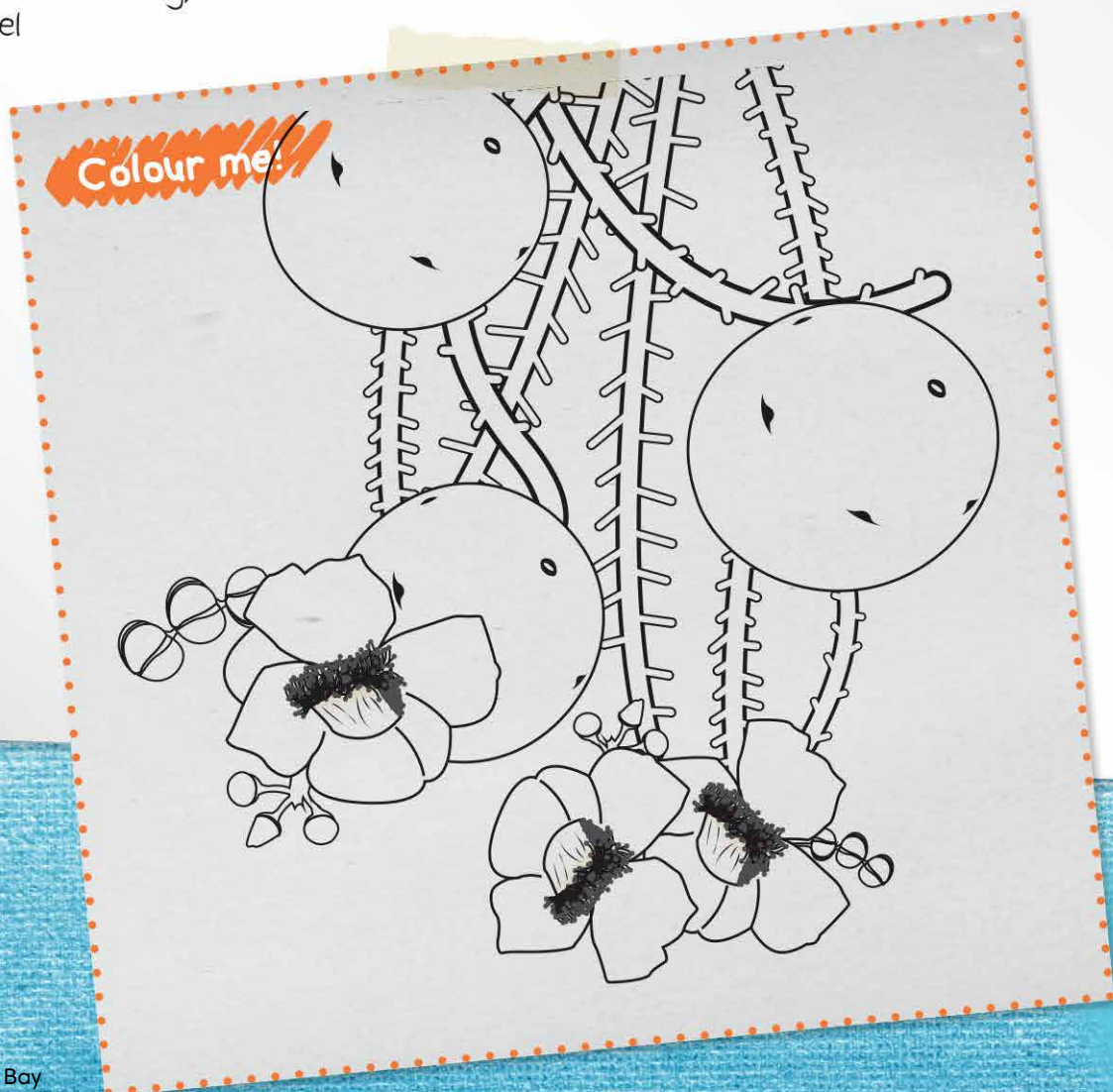
Last weekend, I visited Gardens by the Bay and noticed a really interesting-looking tree called the **Cannonball Tree (*Couropita guianensis*)**. It had branches that looked like tentacles, with fruit and flowers growing out of them! The fruit really looked like cannonballs and the flowers, like little pink aliens! I looked up the tree on the internet and read that the tree is pollinated by bats, which are attracted to its strongly scented flowers. I also read that the flowers and fruit of the tree can be used as medicine. Is that true?

I drew a picture of the Cannonball Tree here, in case you do not know which one I am talking about.

Can you tell me about any other fascinating trees at Gardens by the Bay?

Thank you.

Yours Sincerely,  
Noel





# Letters to David: Fascinating Trees

Dear Noel,

What an exciting project you are doing! Good for you!

Yes, it is true that the Cannonball fruit and flowers have been used in traditional medicines. It is also considered a sacred plant to Indian Buddhists.

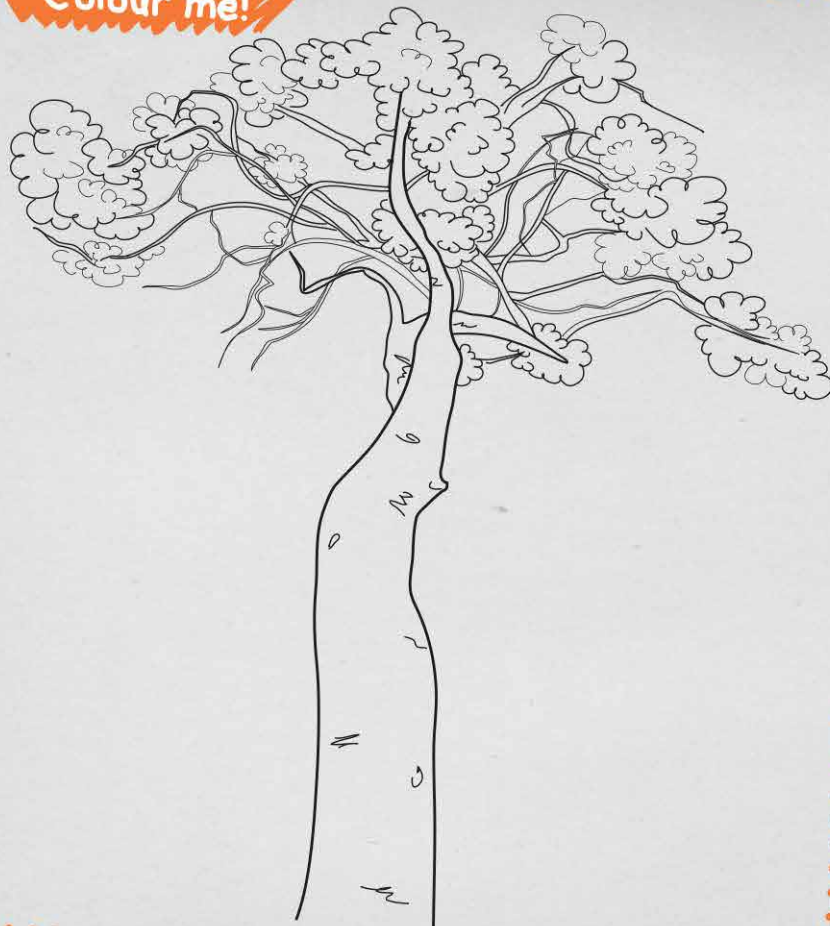
We have many interesting trees here. One of my favourites is the Ghost Tree (*Moringa drouhardii*). Even its name is scary! It is named as such because it is often grown near grave sites (and between you and me, I think it is also because its winding branches make it look creepy and ghostly at night!). In reality, there is nothing scary about it! It is a type of Bottle Tree native to Madagascar. Its seeds can be eaten and made into oil. Here is a sketch of it.

I hope you find this information helpful.

Do let me know if there is any other way I can help!

Best regards,  
David

Colour me!



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# 09

## **Letters to David: Small Creatures / Larger Than Life**

Discover interesting facts about the small but important creatures and larger-than-life plants at the Sun Pavilion and Victoria Lily Pond, through the exchanges between David and his friends, Jerry and Penny.



Dear David,

How have you been? It's been a while since we last spoke. I was out doing a bird survey the other day and was reminded of you when I saw a **Spotted Dove (*Spilopelia chinensis*)**.

Do you remember back in the early days of the Gardens' completion, how excited we were when the fauna started returning? I still remember us doing our rounds together when we saw a couple of Spotted Doves foraging for seeds and fruit on the ground. I have never been so happy to see this common local bird in my life!

Recently, I discovered that Dove parents build their nest and look after their young as a couple. Fascinating, isn't it? I even dug up some of our old research pictures. Here's one of the Spotted Dove.

Brings back memories, doesn't it? Let's have dinner one of these days. I can meet you over at the Gardens. It would just be like old times.

Take care, my friend!

Warmest regards,  
Jerry

Colour me!





Dear Jerry,

Time flies, doesn't it? The picture of the Spotted Doves really brings back some memories.

Do you remember our first rainy season just before we opened? The Gardens were overrun with Millipedes (*Anoplodesmus sp*)! We were so happy to know that the soil was healthy enough to support fauna and that there were natural organisms breaking down rotting plant material and regenerating it into nutrients for the plants. Yet, at the same time, we were worried that they would frighten the visitors! Good thing our fears were unfounded. People didn't even realise they were there!

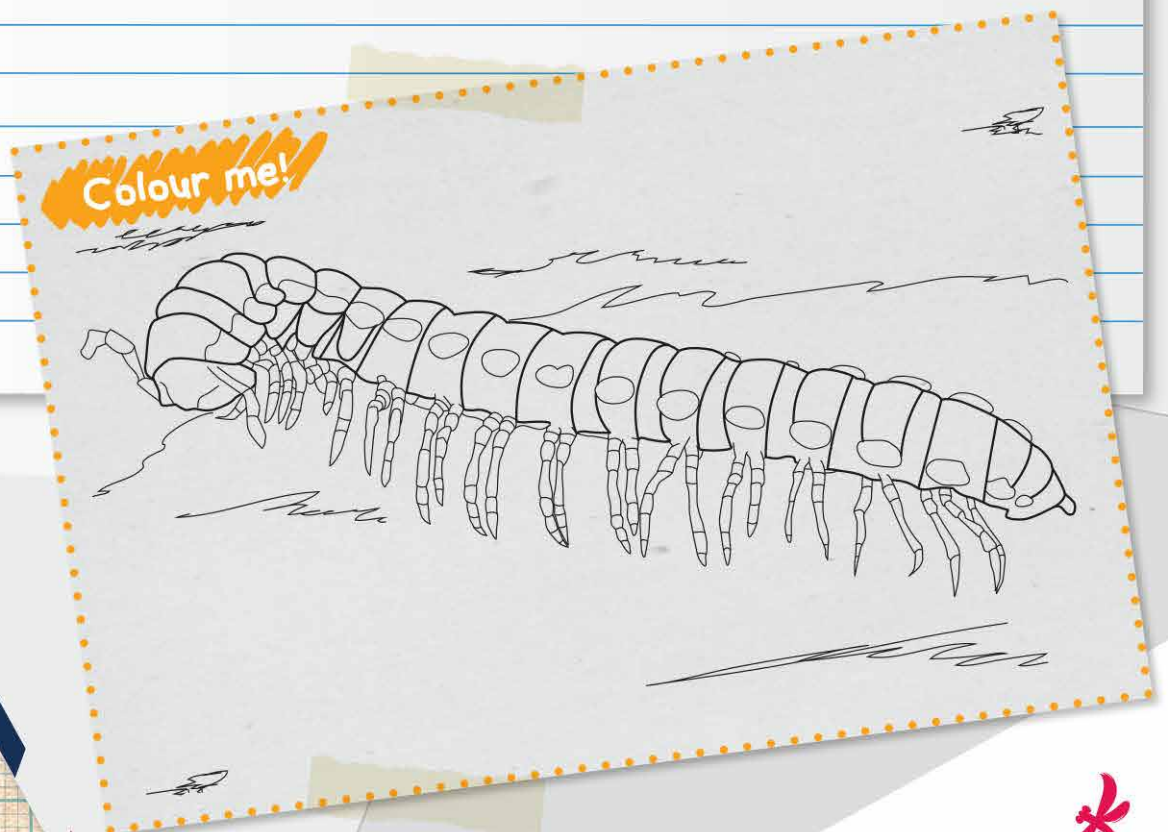
Come to think of it, Millipedes really are quite amazing. There are more than 10,000 known species of millipedes in the world. There is even fossil evidence that suggests millipedes were amongst the first land-dwelling animals! We don't usually notice these small organisms but when you think about it, they are crucial to our ecosystem.

After I received your picture, I went back to look at my files and found some old pictures too. Here's one of the Millipede.

Shall we meet up next Wednesday? We could grab a drink and take a walk around the Gardens. Just like old times.

Let me know!

Your friend,  
David





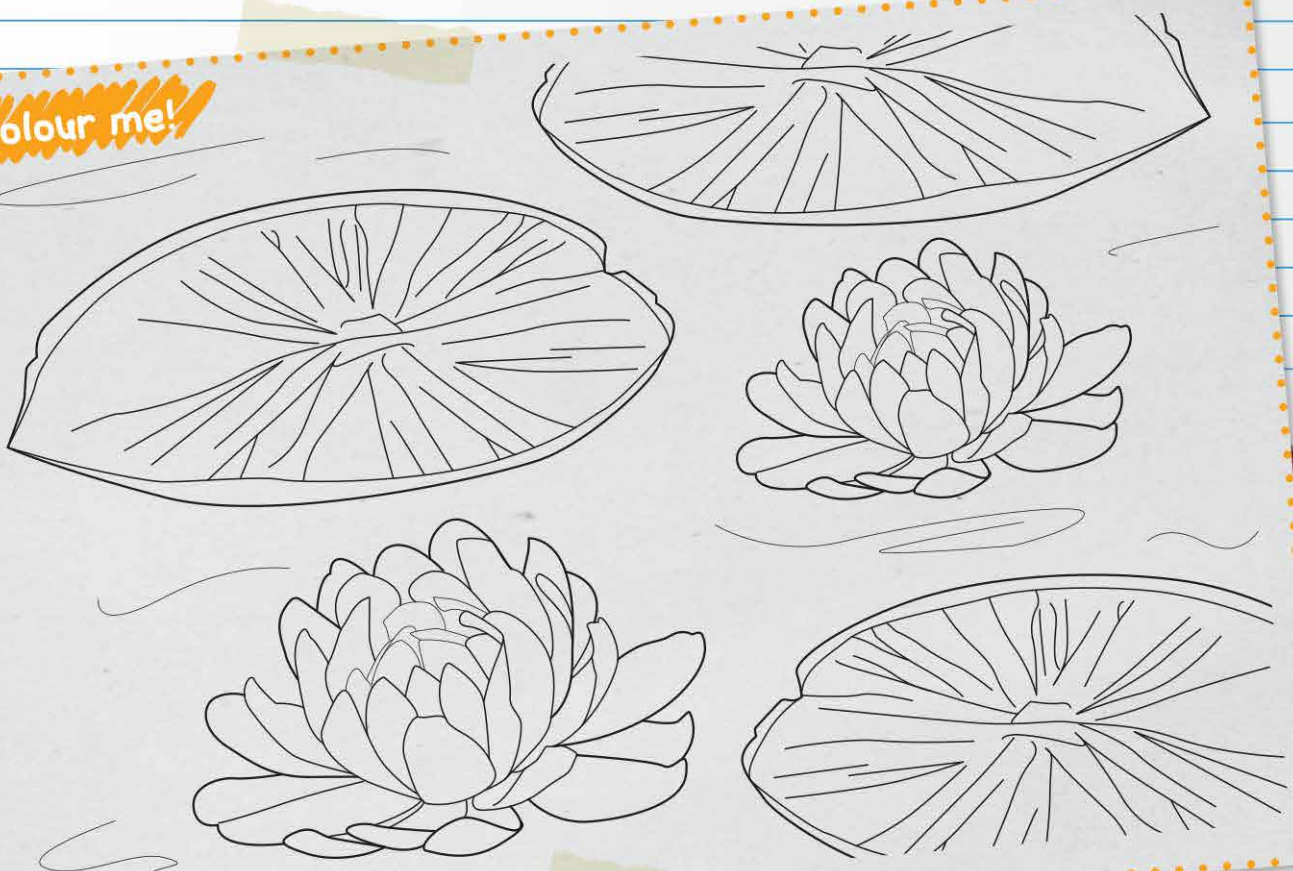
Dear Penny,

Our date by the Victoria Lily Pond at the Gardens was lovely. I saw some **Victoria Lilies (*Victoria amazonica*)** in their native habitat on the Amazon River that day. As the largest species of Water Lily in the *Nymphaeaceae* family, they were truly a sight to behold! The leaf of the Victoria Lily can grow up to 3 metres in diameter and is so strong that it can support a human baby! I drew you a picture of the lilies I saw.

How is the planting at the Sun Pavilion? Are the Cardons holding up well? I hope to send more plants back to add to our collection.

Missing you,  
David

Colour me!





Dear David,

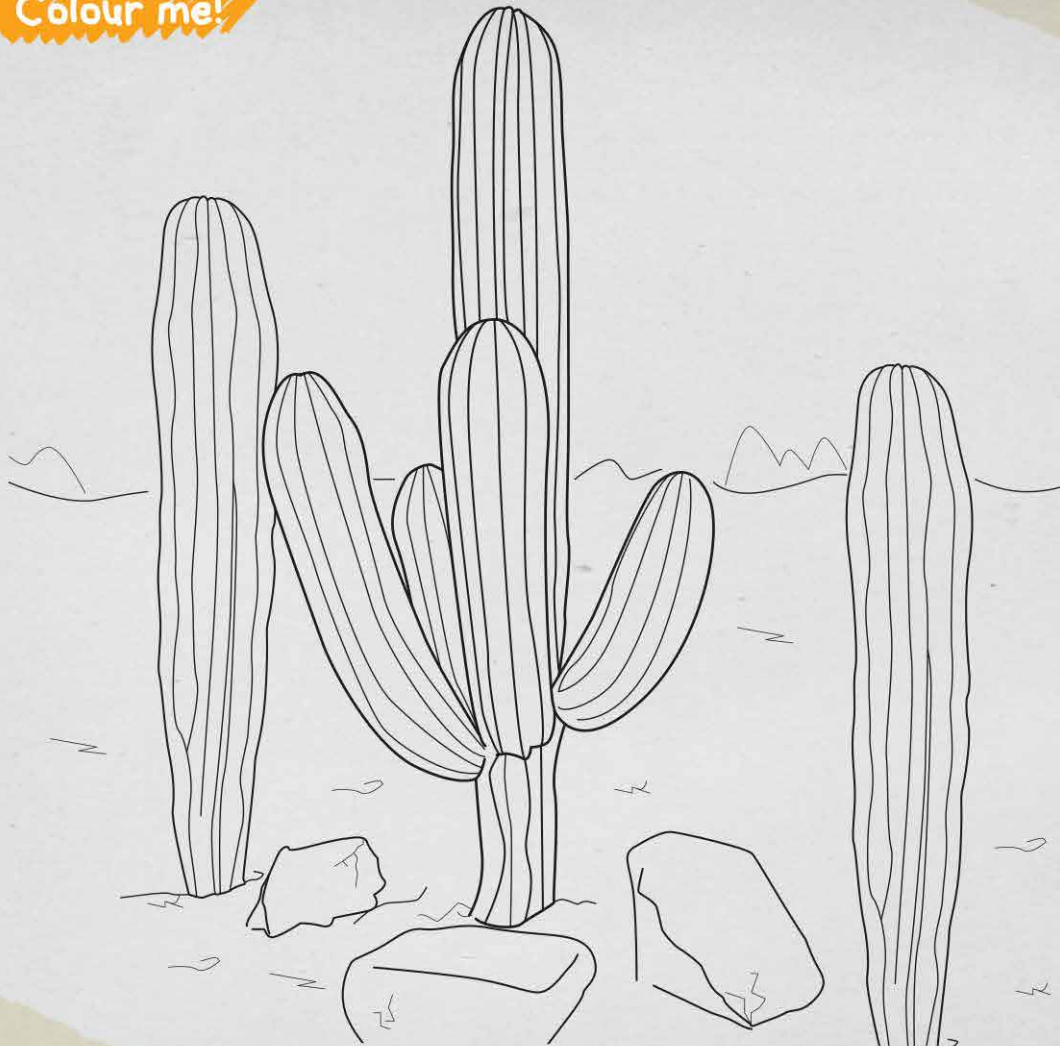
I miss you too! The Victoria Lilies sound lovely.

The **Cardons** are growing well. I know that it is the tallest cactus species in the world but seeing them in real life still amazed me! To think that ours still have room to grow! Can you imagine what it'd be like when they grow to their full height? Also, until Carlos told me, I did not know their fruit could be eaten! I read that the ribs running down their trunks adapt to survive in dry climates, allowing them to expand and contract to store water. How amazing is that?

I have drawn a picture of the Cardon I planted here for you too. Hope you like it.

Thinking of you,  
Penny

**Colour me!**





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# 10

## Letters to David: Super Duper Trees

Do you know that there are solar panels on the top of some of the Supertrees?

Find out more about these giant structures through the exchange between David and his friend, Mel.



# Letters to David: Super Duper Trees I

Send Chat Attach Address Fonts Colors Save As Draft

To: education@gardensbythebay.com.sg

From: mel@gardensbythebay.com.sg

Subject: Super Duper Trees

Dear David,

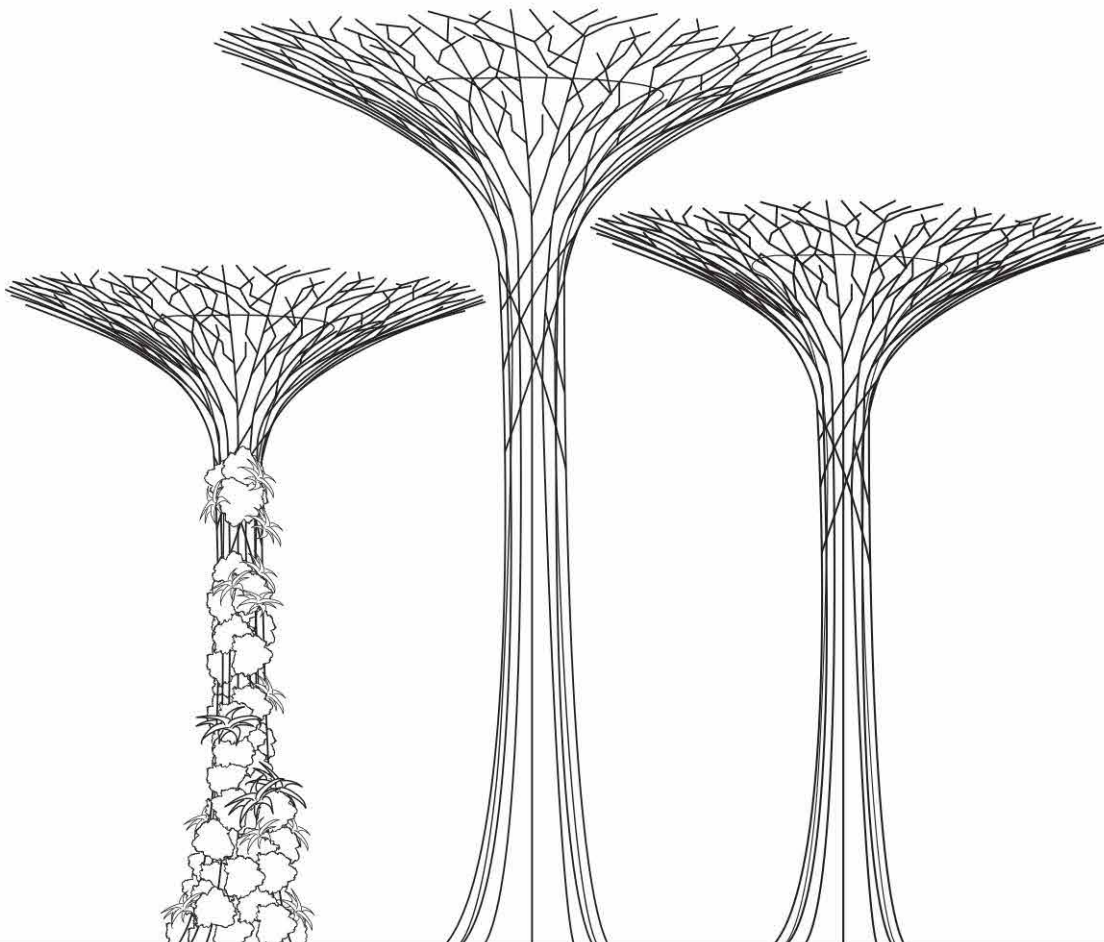
The discussion yesterday was very helpful. I felt so inspired about growing our own vertical garden (gardens that are planted upwards on a vertical surface) on our **Supertrees!**

I have been doing some research and found some really fascinating information about vertical gardening. Did you know that many people grow vegetables and herbs in their apartments and flats, using homemade, hydroponics systems that they hang at their windows? Many buildings in Singapore have also adopted **"green walls"** where plants grow on parts of their facades in a bid to make our city more green. In Singapore, where we have so little land, planting upwards really IS the way to go.

I have started thinking about some of the plants that could go on our Supertrees. I have attached a drawing I did last night. What do you think?

Best regards,  
Mel

Which plants would you plant on the Supertrees? Design your own vertical garden here!



Attachment: supertrees.jpg

Send Chat Attach Address Fonts Colors Save As Draft

To: mel@gardensbythebay.com.sg

From: education@gardensbythebay.com.sg

Subject: Super Duper Trees

Dear Mel,

The design looks great! I can't wait to see the finished result!

Guess what I just heard? There are plans to place **photovoltaic cells (solar panels)** on the top of some of our Supertrees. These cells will allow us to harness the energy of the sun and convert it into electricity. What a wonderful source of alternative energy! Rick, from Engineering, told me that the energy we generate each day from the photovoltaic cells would be enough to light up the Supertrees at night.

Looks like our Supertrees will really be "green" all the way!

Rick asked me to think about some other forms of alternative energy. Any ideas? Here's a list I made so far:

### Alternative Energy Sources

1. Photovoltaic Cells / Solar Panels
2. \_\_\_\_\_
3. \_\_\_\_\_

Do let me know if you think of anything else!

Best regards,  
David

Can you think of any other creative uses for photovoltaic cells?  
Write down any that you can think of and draw the most exciting one here!

Attachment: blank.jpg