BUSH TALK

book FOUR

NATURAL HISTORY

About BUSH TALK . . .

Bush Talk is a wildlife and conservation newssheet that was first published by Forestry Department in November 1981. The original paper was designed by Maria Grech and contained a selection of stories about Saint Lucia's wildlife written by her at the request of Paul Butler, Forestry Conservation Officer. Giovanni St. Omer did the illustrations for this first issue and the cartoon featuring St. Lucia's National Bird, `Jacquot', was drawn by his brother Alwyn St. Omer. The newssheet was a great success and it was decided to continue on a monthly basis using a different topic each month and asking an appropriate person to contribute the introduction. All subsequent issues were written and illustrated by Maria Grech who also edited the introductions and did the layout. When Alwyn St. Omer left the island in 1986 to further his studies, Christopher Cox, artist and ornithologist working for Forestry and Lands Department took over as cartoonist.

Copies of each issue are distributed throughout the school system as part of Forestry and Land Department's Environmental Education Programme. In addition, the `Voice', a local newspaper with a weekend circulation of about 5,000, uses Bush Talk as a supplement thereby further increasing its readership.

Whatever the topic, care is always taken to stress the importance of conservation, protection of the environment and, preservation of the island's rainforest and watershed areas.

contents

page

Introduction 1

Reptiles..... 3

Garden Flowers..... 9

Moths and Butterflies..... 15

Orchids..... 21

Beneficial Insects..... 27

Herbal Remedies..... 33

The Saint Lucia Naturalists' Society..... 39

Question Time..... 45

INTRODUCTION

If forests are to provide habitats for the maximum number of wildlife species they must also contain many different plant types.

Among wildlife workers, foresters and naturalists there is growing uneasiness and concern over the public's lack of real concern regarding wildlife and its problems either in Saint Lucia or indeed, in the rest of the world. Coupled with this concern however is the awareness that there is a paucity of accurate wildlife educational material available to teachers and pupils at elementary school level. This book should be of great value to teachers and young people and its role in wildlife education should be strong.

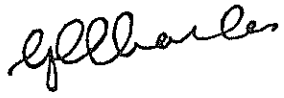
To help counteract this lack of available resource material on wildlife, the Forest and Lands Department, through BUSH TALK, attempted to provide some of the needed educational tools. This book is designed to present some of the basic information on Saint Lucia's wildife and provide a vehicle for the flow of information between teachers, students and also the general public.

The Forest and Lands Department supports programmes that enhance the aesthetic, recreational and economic values of wildlife. They seek to ensure the wise use of this natural resource as an integral part of our living standard.

At one time people lived in close contact with the land. They depended directly on the plant and animal life around them and knew they needed to understand them. Today, people live in an increasingly man designed setting. Consequently, many of them grow up with little or no understanding of the other ceatures with whom they share this planet, or of the close links we have with each other. This book is a source of materials designed to stimulate students' awareness and concern for wildlife in a general sense.

The study of wildlife deals with animals of many types and their interaction with each other and with their environments. Treated in this way it can be a study of animals for themselves because it is fun and naturally appealing.

Finally, the study of wildlife should be seen as a drama in which every actor, including the child has their own special part to play. Everyone is a participant. There are no spectators, for, interested or not, human or animal, in the country or the city, all species and especially man effect the environment by their actions and their decisions. This makes it imperative that people understand the need for well-planned natural resource policies. It also underlines the fact that as humans we must learn to accept the responsibility for the wise management of populations ours as well as those of our wildlife. This is part of the responsibility that comes with power. The preparation for its wise application can begin very early, with today's children, for they will one day inherit the the results of our present-day care or neglect of our environment and its wildlife. It is to these children, all of them no matter where they are, that this book is dedicated.



Gabriel Charles
Chief Forest Officer

FOREST AND LANDS DEPARTMENT
Ministry of Agriculture
St.Lucia

BUSH TALK

REPTILES

1. Snakes
2. Iguanas
3. Lizards
4. Geckos
5. Frogs and Toads

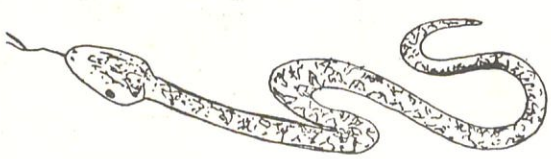
SNAKES

Snakes are probably the most feared of all reptiles but like everything else they too have their place in nature. Even the poisonous types will usually only attack man if they are hurt or threatened. If they have warning that someone is approaching they will almost always slide quietly away.

Some people believe that snakes 'sting' with their forked tongues. In fact the tongue is used more like a nose. By flicking it in and out the snake can find and follow a trail or learn more about its surroundings.

Saint Lucia has four kinds of snake. The rarest is the kouwess, *Dromicus ornatus*, a pretty, olive-brown snake found only on the larger of the Maria Islands. Only a few people have seen it and so not much is known about its habits. It is about three feet long with a black zig-zag pattern on its back and is probably the rarest snake in the world.

Another Saint Lucian snake is the smallest snake in the world, *Leptotyphlops bilineatus*. It is found only in Saint Lucia, Martinique and Barbados. Because it is less than five inches long and lives underground it is often mistaken for a worm.



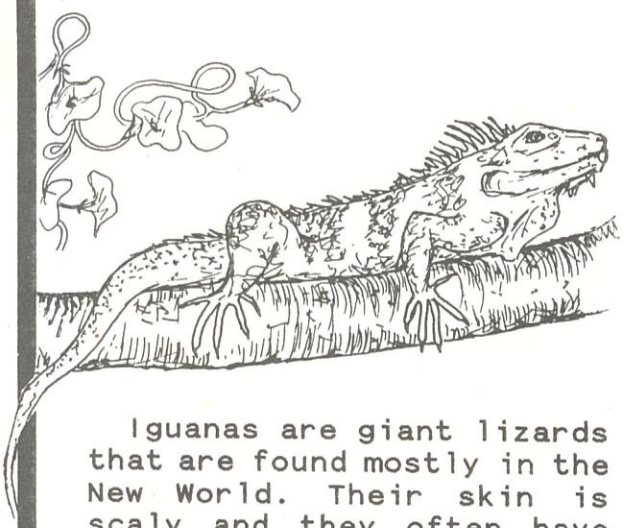
The two other species are the fer-de-lance, *Bothrops caribbaeus* and the tet chyen, *Constrictor constrictor orophias*. Both these snakes feed chiefly on rats. The fer-de-lance is a dark, slender snake five or six feet long that hunts at night. It is a poisonous snake and injects poison or venom into its prey through the hollow teeth or fangs in its top jaw. This helps to break down the tissue of any animal the fer-de-lance catches and make it easier to digest.

The tet chyen is large and heavy with a beautifully patterned skin. It can grow to a length of ten feet or more but is not poisonous. It hunts in the daytime and kills its prey by wrapping itself around it until it suffocates.

Some snakes lay eggs but the tet chyen and the fer-de-lance give birth to live young. The fer-de-lance can produce as many as sixty young ones at one time. They are small but perfect and already have venom in their poison sacs and fangs to strike with.

Until recently Saint Lucia had a fifth species of snake. It was the **cribo** or black snake, *Clelia clelia clelia*. The cribo was four or five feet long, dark in colour and non-poisonous. It liked to kill and eat the fer-de-lance. It was once found all over the island but is now believed to be extinct.

IGUANAS

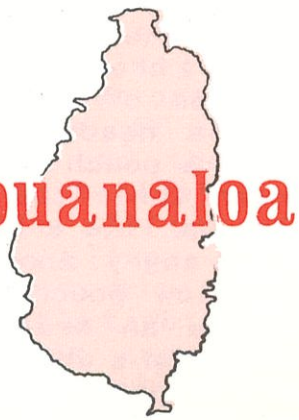


Iguanas are giant lizards that are found mostly in the New World. Their skin is scaly and they often have spikes or horns on their head and down their backs. They look a lot like the dinosaurs that roamed the earth before man appeared. Most iguanas are fast runners and can swim or dive if they have to. There is even a marine iguana that lives in the sea and eats seaweed. It is found only on the Galapagos Islands, a protected area off the coast of Peru. The scientific name of this species is *Amblyrhnchus cristatus*.

The only iguana found on Saint Lucia is *Iguana iguana*, or the green iguana. This creature was once so common that the Amerindians called Saint Lucia the Island of the Iguanas. Unfortunately its flesh was very tasty and there were very few other animals to hunt. After a while iguanas were not so common. Now they are hardly ever seen in their natural habitat. Along the east coast from Grand Anse to Dennery, there are still a few living in the wild. But although they are protected they are still hunted by man. Unless something is done to stop this the only iguanas left will be the ones in the Forest and Lands Department zoo at Union.

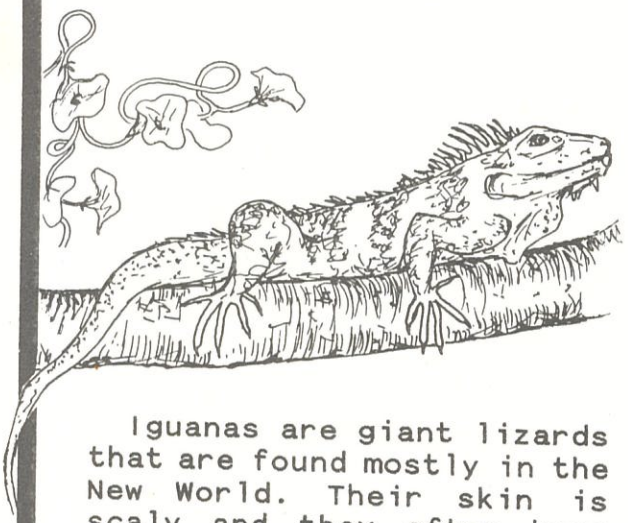
The green iguana can grow to a length of six feet. It has strong legs with heavy, sharp claws and a long, powerful tail. When it is threatened or attacked it will hiss and bite or strike at the attacker with its heavy tail. It looks quite ferocious with its fringe of skin standing up along its back but is really quite gentle if it is left alone. Some species catch and eat other smaller lizards or even birds but *Iguana iguana* is content to munch away mostly on creepers or vines.

The female iguana produces her young ones in eggs that she buries in the ground. They are covered with a soft but tough white skin that protects the embryo inside. It takes fourteen weeks for the young iguanas to hatch out.



Land of the Iguana

IGUANAS



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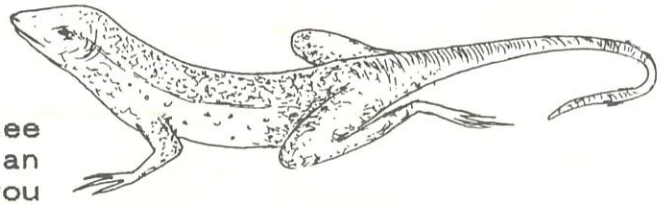
Land of the Iguana

LIZARDS



Even though you may not see anything as splendid as an iguana in your garden, you will see lots of lizards. Tree lizards or zandoli, belongs to the same family group as the iguana. There are three kinds in Saint Lucia. *Anolis luciae, Anolis wattsi*, and *Anolis*.

The immature lizards and the females can be brown or green or even blue. They are only about five or six inches long including their tail and are very good at catching flies and other small insects. Some have a pattern of diamonds shapes on their back and light-coloured stripes down each side. Others have a light brown stripe down the middle of their back.

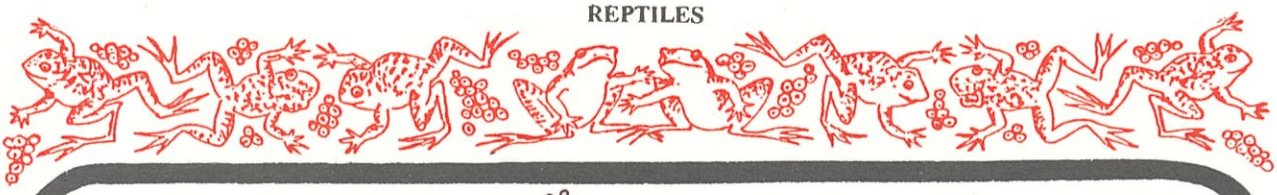
The males are much larger and more brightly coloured. *Anolis luciae* grows to a length of eight inches and is often bright green with a darker head. *Anolis extremus* is a bit smaller. He is green with heavy black marks on his head, black rings around his eyes and a yellow belly. *Anolis wattsi*, the smallest of the three, is brown and green with patches of white and blue on his head. All the males have a pouch of loose skin under their chin that they blow up like a balloon if they are angry. *Anolis luciae* has a yellow pouch, *Anolis extremus* has an orange one and *Anolis wattsi* a white one.

Lizards fight a lot but they hardly ever do each other any real harm. They will often fight if their territory has been invaded by another male, just to show him who is boss.

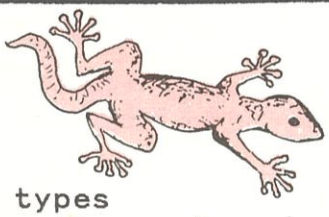
All the lizards in Saint Lucia lay eggs. They are small and white and have a leathery skin. You may find them in the garden pushed under some fallen leaves or under a covering of loose earth. You may even find them in the house, hidden in a plant pot. When the young ones first hatch they are very small and delicate. Many do not survive the first few days of life. They are often eaten by birds or even by larger lizards.

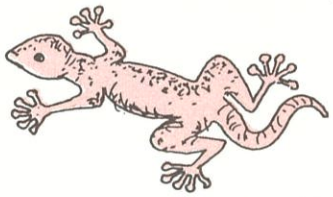
Anolis are mainly insect eaters but they also like fruit and will visit you regularly if you put out some ripe banana, mango or sugar to attract them.

There are also two kinds of ground lizard in Saint Lucia. One is the small, shiny, brown *Gymnopthalmus pleei* that is found all over the island. The other is *Cnemidophorus vanzoi*, the rare Maria Island's lizard. Some of the Maria Island's lizards have been sent away to be bred in captivity in zoos in England and America. If the breeding projects succeed they may be introduced onto some of the other small islands around Saint Lucia's coast.



GECKOS





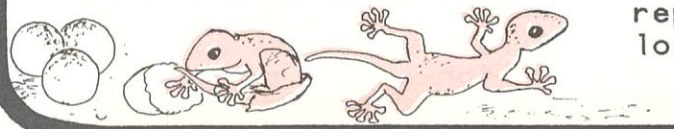
There are only three types of gecko on Saint Lucia. The one you probably see most often is the house gecko, *Hemidactylus mabouia*. This small, fat, pinkish reptile is sometimes called a 'wood slave'. In patois its name is mabwya. It hides during the daytime and only comes out after dark to hunt for insects. If you listen you may sometimes hear it making strange clicking noises. It is about five inches long and very shy. It likes to hide behind pictures but if you disturb it by putting on a light or going too close, it will disappear with a snake-like wriggle of its tail - straight back to its hiding place. Its little round eggs with their hard white shells are often found at the back of a bookshelf or some other dark place.

Hemidactylus mabouia is not a native of the Caribbean. It was brought here many years ago on the same ships that brought the slaves from Africa.

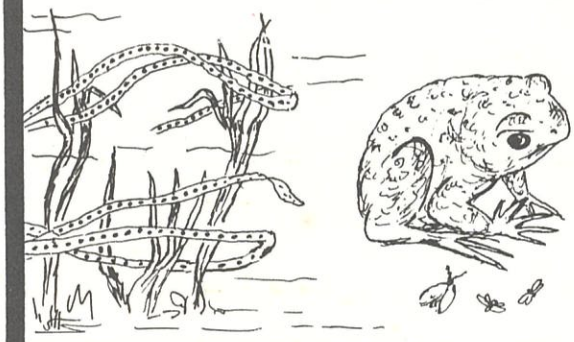
Another larger species, is *Thecadactylus rapicauda*. Like all the other geckos, this one has scales covered with fine bristles on the underside of its toes. This helps it to cling to any surface no matter how slippery it is. In this species the toes are almost hidden by the large pads. The body of *Thecadactylus rapicauda* is about four inches long and its tail only about two inches. Its skin is covered with dark markings that make it blend in easily against the tree trunks on which it lives. The female lays one egg about three quarters of an inch long. When the young one hatches out and uncurls itself it is already about two inches long.

The last species of gecko is found only on Saint Lucia. It is the little pygmy gecko, *Sphaerodactylus microlepsis*. This species is found all over the island. It is only about two inches long, usually reddish-brown or even orange with darker bands or markings on its body. It is found hiding among the fallen leaves or under a rock. It moves very quickly and so you have to be very fast if you want to get a good look at it. This little gecko has two close relatives, *Sphaerodactylus vincenti*, found only at Vigie and *Sphaerodactylus thomasi* from Maria Island.

Geckos do not have long, slender tails like lizards but short fat ones. They can drop these off if they are attacked and the cast-off piece of tail will wriggle around on the ground as if it was alive. While the attacker is busy gobbling up this little tidbit, the tailless gecko can escape. In time a new tail will grow to replace the one that has been lost.



FROGS AND TOADS



Frogs and toads belong to a group of animals called amphibians. Amphibians are the link between land-living animals and fish. There are three amphibians in Saint Lucia, two frogs and one toad.

The piping frog *Eleutherodactylus johnstonei* is the smallest. Even fully grown it is less than one inch long. It gets its name from the musical sound the male makes at night as he calls to his silent mate. If you get close enough you will see how the skin under his throat puffs out like a tiny balloon with each note.

The female lays her eggs in a damp place under a stone or a fallen tree. After two weeks perfect little frogs about a quarter of an inch long will emerge from these eggs. They cut themselves free with a special tooth on the end of their nose.

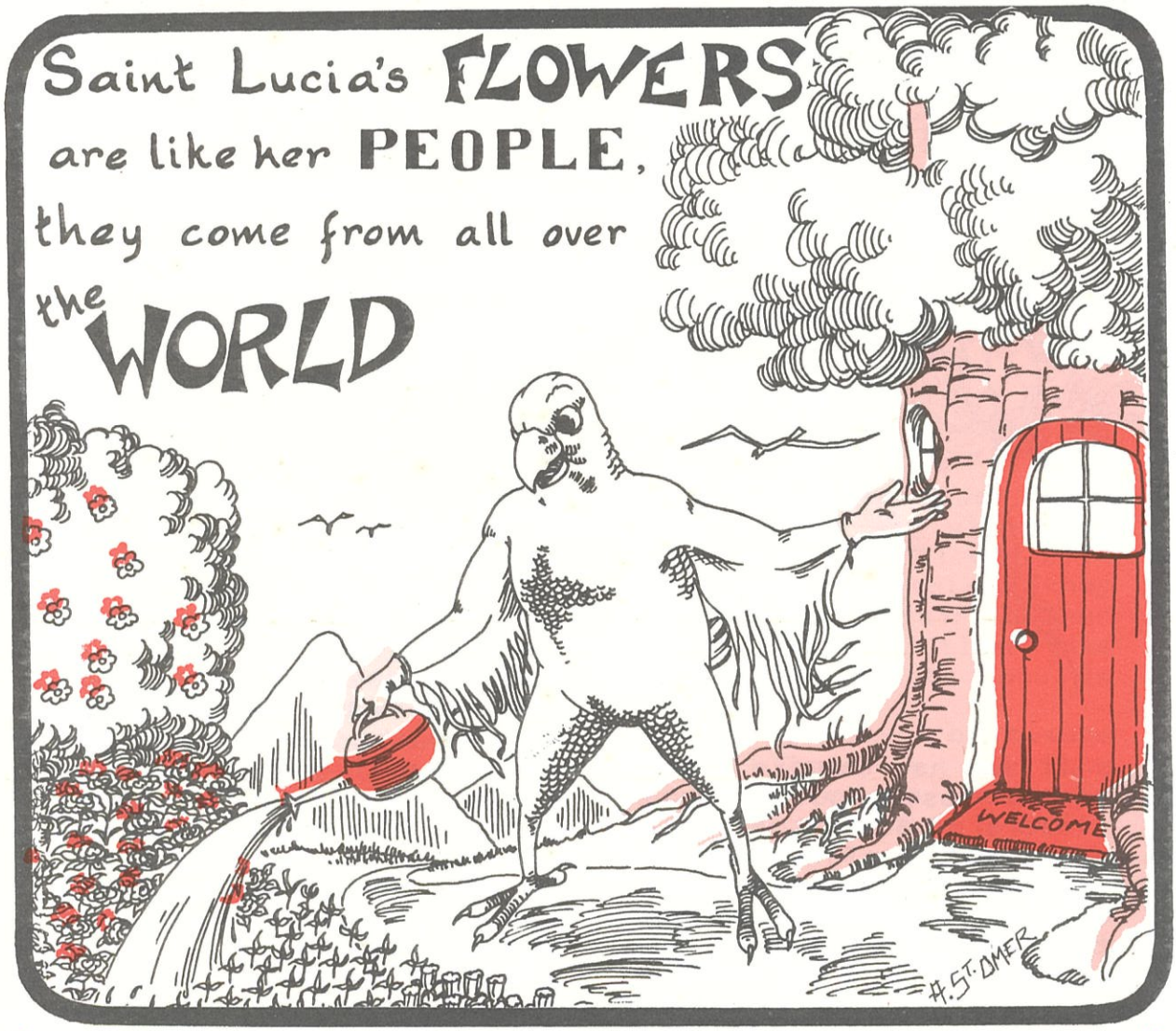
Our second amphibian *Hyla rubra* is about two inches long and has large fleshy pads at the ends of its toes to help it cling to flat or smooth surfaces. If you have jars of water in the house with plants in them this dark-green, long-legged frog will hide inside of them. If you listen, you may even hear them croaking away in their watery hiding place. The female lays her eggs in water and the tadpoles turn into frogs after they leave the egg. They swim around like tiny fish until their tail disappears and they grow arms and legs. Then they leave the water and go onto the land.

Our third amphibian, the toad or kwapo, *Bufo marinus*, is not really a native of Saint Lucia. It was brought to the Caribbean to help keep the sugar plantations free of insect pests. It is very large and can grow to a length of nine inches and weigh over two pounds. It has dry, warty skin, a fat stomach and quite short legs for its size.

In the daytime it stays hidden in any cool shady place. At night it comes out to feed. If you leave an outside light on you may see one or two toads sitting patiently below waiting to catch the insects that are attracted to the light.

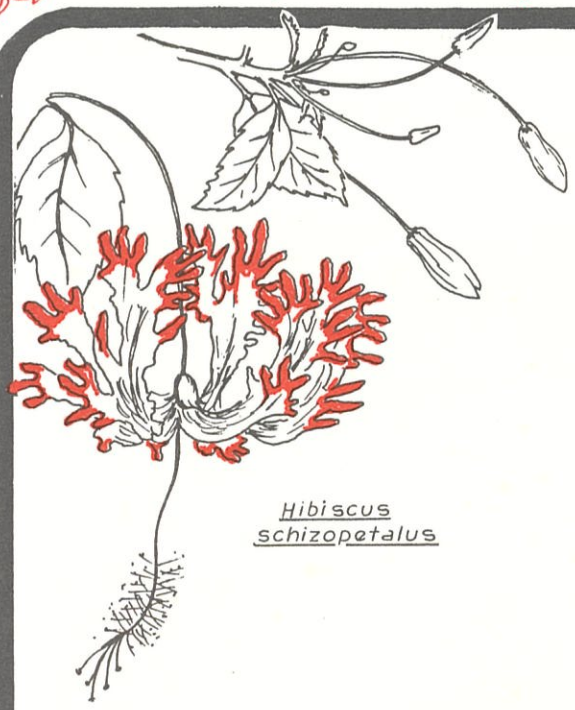
The female toad lays her eggs in the water. At first they look like strings of black beads held together with jelly. Then the 'beads' change into little tadpoles. After about four days they wriggle out of their jelly blanket and swim away. It takes about a month for them to turn into small toads, then they will leave their watery environment and go to look for a home on land.

BUSH TALK



GARDEN FLOWERS

1. Hibiscus
2. Bougainvillea
3. Ixora
4. Oleander
5. Allamanda



Hibiscus schizopetalus

HIBISCUS

If you had to make a list of the most popular garden flowers of Saint Lucia what would be your first choice? Hibiscus? Bougainvillea? Oleander? Allamanda? Perhaps the pretty red ixora? They are probably all flowers that you are familiar with. But do you know that not one of them is a true native of Saint Lucia.

Like many of our shrubs and flowering trees they were brought here from the far corners of the earth. They are all known by their latin names because these are the names they were given before they were introduced to the island.

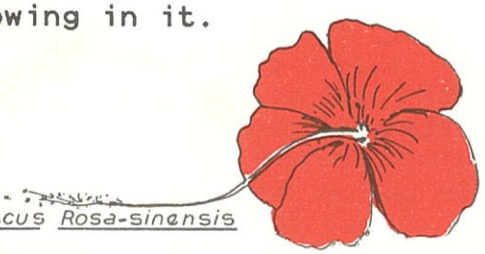
The hibiscus belongs to the plant family called the *Mulvaceae*. It is a relative of a very common vegetable, the okra *Hibiscus esculentus*. It is also related to the blue mahoe *Hibiscus elatus*.

The type of hibiscus that you probably know best is the one that has five bright red petals and heart shaped leaves with jagged edges. This variety came originally from South China. Its name is *Hibiscus rosa-sinensis* or the Rose of China. It is also called the shoe flower. Try cleaning your shoes with it the next time you are short of black shoe polish and you will see why it was given this name.

Another name given to the hibiscus is the shampoo bush because its leaves can be pounded with water to make a shampoo for your hair. Try it, it gives a good lather. But if you do not have a bush in your own garden be sure to ask permission before you pick the leaves.

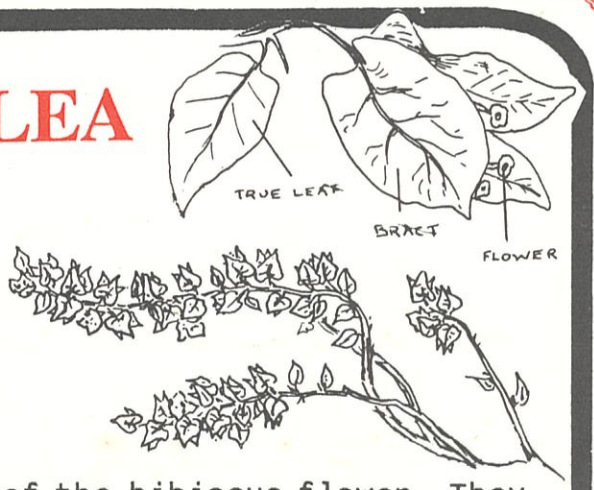
Another member of this family is the coral hibiscus or Japanese lantern, *hibiscus schizopetalus*. Its blossoms are not as bright or large as *Hibiscus rosa-sinensis* but if you look closely you will see how beautifully shaped its delicate petals are. They really do look like a tiny piece of coral.

Even if the hibiscus was not your first choice you will hardly find a garden that does not have one or two varieties of this flower growing in it.



Hibiscus Rosa-sinensis

BOUGAINVILLEA



The purple bougainvillea belongs to the ***Nyctaginaceae*** family. It is such a common sight all over the island that you will probably find it hard to believe that it is also an immigrant flower. Mind you, this one didn't have as far to travel as the hibiscus. Its natural home is Brazil in South America. There is a story about how this plant got its name. In 1766, Louis de Bougainville a French navigator, set out to sail around the world. Three years later when his voyage was completed he became the first Frenchman ever to have done this. During his travels he saw many things that were new and strange to him. When he was able, he collected samples to take back to Europe with him. One of these was the prickly bush with the brilliant purple flowers that he found in Brazil. His fellow country-men were so impressed that they named it **bougainvillea** in his honour.

In fact the purple flowers of the bougainvillea are not really flowers at all. They are bracts. A bract is a leaf that has taken on a different shape to the leaves on the rest of the plant. Bracts are usually brightly coloured. The purple bracts on the bougainvillea attract the birds and the insects that feed on the nectar in its small, pale yellow flowers. If you touch them you will find that they feel very different to the soft petals of the hibiscus flower. They do not droop and wither as the petals of a flower will when it dies. Instead they get dry and their colour begins to fade. When this happens the bracts look as if they are made of tissue paper. That is why the bougainvillea is sometimes called the 'paper flower'.

Bougainvilleas look their best during the dry season. They love the sun and need very little water. They will grow well in dry places, even where the ground is mostly sand. Their clumps of close-packed purple or red and their sprays of pink and orange, are so bright they make the rest of the garden look pale by comparison.

Like the hibiscus, many bougainvilleas are hybrids. This means they have been specially bred from two different parents. When this is done, the flowers on the new plant are usually bigger than those of the original or wild variety. They can also be produced in many more colours. Lady Wilson, Mrs Butt, Helen McLean and the Princess, are not famous people. They are different varieties of bougainvillea.

IXORA

Although the ixora is a popular flower, its name is not as well-known as the others. Its clusters of red four-petalled blossoms blaze brightly from many hedges all year round. The ixora is a close relative of the coffee tree (*Coffea liberica*) that has been grown here since the time of the early French settlers. The lovely gardenia, *Gardenia augusta*, with its delicately perfumed white flowers, is another member of the same family.

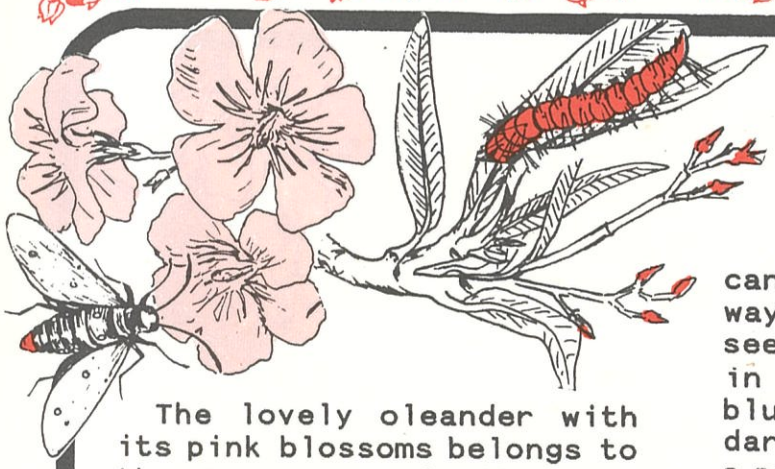
The coffee tree, the gardenia and the ixora all belong to the *Rubiaceae* family. This is a large plant family made up mostly of woody shrubs and trees.

The ixora is also a traveller from a different part of the world. Not China or South America this time but India. It was called 'flame of the wood' or 'jungle geranium' because of its scarlet flowers. Now, like the hibiscus, it comes in many different colours. You will find pink, orange, yellow and even white ixoras growing here if you look for them.

In its native land, the ixora was used for medicine. A healing liquid can be made from the flowers and the bark to soothe bloodshot eyes. An ointment can be prepared from the leaves to treat sores and ulcers. Many modern medicines have been discovered by examining the wild plants that are used for healing. Until recently, the only medicine available to treat malaria was a drug called quinine. This drug is made from the bark of the *Chinchona* tree, another member of the *Rubiaceae* family.

The ixora does not grow easily from cuttings like some flowers but it can do something many of the others cannot. It can send out suckers to make new plants. These suckers will grow up and make the parent bush thicker or they can be cut away and planted in another place to make a new bush.

Plants are like people, you cannot treat them all the same way. You must learn what each one needs in order for it to grow well. What kind of soil does it like? Does it prefer sunshine or shade? Does it need a lot of water or just a little? Does it want to stretch and climb or would it be happier if it were trimmed into a neat bush? If you take the time to learn the answers to all these questions you will be rewarded with happy plants and a beautiful garden.



OLEANDER

The lovely oleander with its pink blossoms belongs to the *Apocynaceae* family. Its real name is *Nerium oleander*. One of its relatives is the pink and white periwinkle that grows in many graveyards. Another relative is the allamanda. Most members of this family have a milky juice or sap. The sap of the oleander is poisonous, so are its leaves and roots. Even the wood can be dangerous so you should not use it to make a fire to cook on. It is best if you do not handle this bush at all. If you do, remember to wash your hands thoroughly afterwards. In some places a medicine is made from the oleander that is used to treat skin complaints.

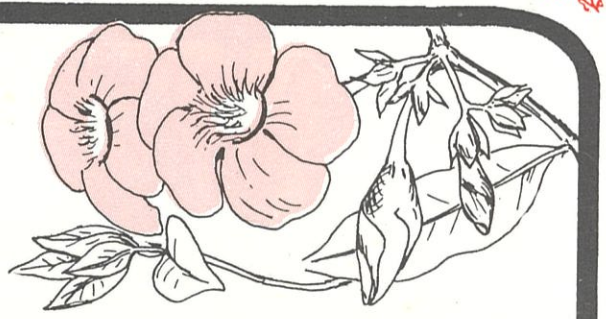
The oleander originally came from Asia Minor and from the Mediterranean where it is sometimes called the 'rose bay'. It is a sturdy bush that flowers throughout the year. It was often used for hedges because neither animals nor insects ate it. You will see it growing in the gardens of houses and hotels as well as along the highway leading to the Vigie Airport. Unfortunately, a few years ago, something happened that caused a lot of these oleander bushes to be cut down.

Unlike flowers, insects can sometimes find their own way! In 1982, a new one was seen flitting happily around in the gardens of the Cariblue Hotel. It had beautiful dark, steely-blue wings with a pattern of white spots and a dark blue body with a blazing bright orange tail. This was *Synyomedia epilais walker*, otherwise known as 'polka dot', a moth that flies around in the daytime instead of at night.

Within a few short weeks all the lovely oleander hedges at Cap looked as if they had been scorched with a blowtorch. They had been attacked by hundreds of hairy orange caterpillers that were hatching from the pale yellow eggs laid by this newly arrived moth. Two years later the 'polka dot' had spread itself all over the island. Now it is not seen in such large numbers and so it does less damage than it did when it first arrived.

Perhaps those very first arrivals needed to overpopulate just to make sure that enough of them survived to establish themselves in their new territory. The next time you are near an oleander bush examine it closely. If you find that some of its tender young shoots are dry and dead look further. Somewhere under its leaves you are sure to find a group of busy orange caterpillers with black hair munching away.

ALLAMANDA



The last one on our short list of garden flowers is the allamanda. Like the bougainvillea its first home was in South America. It also got its name from the man who discovered it, a Dr. Allamand. But it is not like the bougainvillea in any other way. It belongs to the same family as the oleander, the *Apocynaceae*. Although it has a milky sap like the other members of this family, *Allamanda cathartica*, is not poisonous. The last part of its name tells us that it is a medicinal plant. The word **cathartic** means something that purges or cleans. The allamanda can be used to make the same sort of medicine that is made from the long, black pods of the pretty yellow-flowering cassia, *Cassia fistula*.

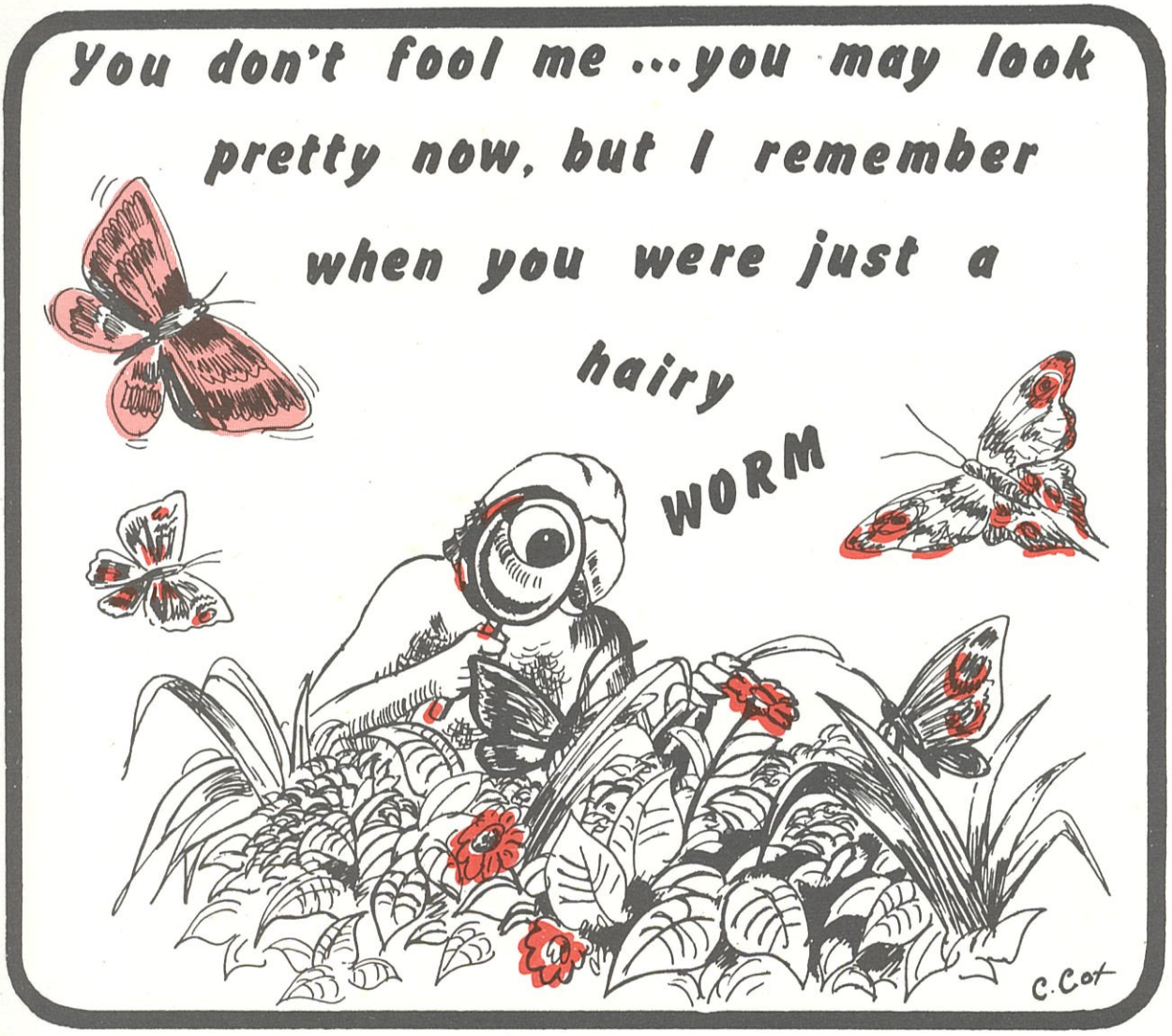
There are different types of allamanda. *Allamanda cathartica*, the one you probably know best is a climbing shrub. It has dark green, glossy leaves and large cup-like yellow flowers. The big buds before they open are fat and brown and look as if they have been varnished.

Another bush that looks very much like *Allamanda cathartica*, is *Allamanda neriifolia*. This type grows closer to the ground and has many more flowers. Its blossoms are smaller and a deeper shade of yellow. Then there is a variety whose flowers are not yellow at all but a pretty pinkish mauve. This species is called *Allamanda violacea* but its common name is the purple allamanda.

At certain times of the year you will see huge black and yellow caterpillers with orange feet munching away at the leaves of the allamanda. They also likes the leaves of the frangipani, *Plumeria rubra*, that belongs to the same plant family. This caterpiller is not a recent arrival like the one that eats the oleander. It has been around for a long time.

When it is first hatched is no bigger than an end of thread. But like all caterpillers, it eats and eats until it gets as thick as your finger. It will keep on eating until its velvety, striped skin looks as if it is going to burst and then it will leave the tree and crawl away. When it finds a place where the earth is soft and moist it will dig itself in. Now it will turn into a shiny dark brown chyrsalid. After a while this case will split open and a beautiful silvery grey hawk moth will emerge. Each plant provides food for different kinds of insects. That is why you will not see the hawk moth caterpiller eating the oleanders and you will never find the caterpiller of *Syntomedia epilais walker* making a meal of frangipani leaves.

BUSH TALK



MOTHS AND BUTTERFLIES

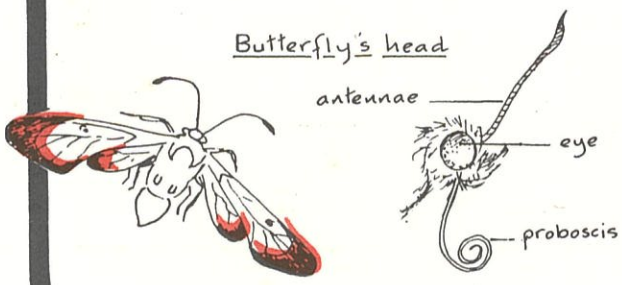
1. Facts and Figures
2. The Eating Machine
3. The Sleeping Beauty
4. Butterflies by Day
5. Moths by Night

A FEW FACTS AND FIGURES

More than three-quarters of all the animal species on earth are INSECTS. There are at least 2 MILLION different kinds. Beetles make up the biggest group with 250,000 species. Next are the moths and butterflies with about 140,000 species. The proper name for this large group of insects is *Lepidoptera*.

This means scaly wings. It is a very good description because the wings of both butterflies and moths are covered with thousands of tiny scales. The colours and patterns of each species are different just like the feathers on different kinds of birds. When you hold a moth or a butterfly in your hand, the 'dust' that is left on your fingers is made up of hundreds of little scales that you have brushed off the creature's wings.

Lepidoptera drink nectar from the flowers just like hummingbirds or bananaquits. Butterflies feed during the day but most moths feed only at night. Their tongue or **proboscis** is like a hollow tube. When the insect is not feeding it is coiled up tight like a watch spring to fit neatly under their mouth.



While the moth or butterfly is flitting from blossom to blossom to feed it is also pollinating the plant in the same way that bees or other insects do.

A few moths fly around during the day. To be able to recognise them you have to get close enough to see the **antennae** or feelers on their heads. The butterflies have feelers that usually end with a thicker part or even a knob. On moths they are straight and often fringed. These fancy feelers give the moth a better sense of smell. Male moths can detect the smell of a female as much as one mile away.

Another way to tell the difference between moths and butterflies is the way they fly. Butterflies move all four wings separately. When they come to rest they hold their wings up to show the duller pattern underneath or they flap them gently up and down. This is to camouflage them from their predators. Moths usually fly with their front and black wings hooked togeth . When they land they close their wings down around their bodies. This hides the bright patches of colour that are often found on their bottom wings and displays the camouflage patterns on the top ones.

There are nine different families in the group of insects called *Lepidoptera*. The butterflies all belong to just one of them. The other eight families are moths.

THE EATING MACHINE

Most mammals have young ones that are just smaller copies of themselves. Not insects! Insects go through a stage in their lives called **metamorphosis**. That means that they change from one thing into something else. Their young or **larvae**, are often so different from the adult that it is hard to believe they are related.

Female butterflies and moths lay dozens, even hundreds of eggs. They place them on the leaves of the plant that their young ones will need for food and then they fly away. For the yellow sulphur butterfly this food has to be cabbage. For the hawkmoth *Pseudosphinx tetrio*, it is allamanda or frangipani. For *Manduca sexta*, the Tomato Hornworm, it is tomato plants and for the beautiful orange and brown monarch butterfly, *Danaus plexippus*, it is a wild flower called milkweed.

The larvae or young are called **caterpillers** and they like to eat! When they first hatch they look like tiny bits of thread but right away they start eating and **growing**. Many of them will first eat the case of the egg they hatched from. Then they start chewing away at the leaf the egg was on. This becomes a full-time occupation. Hanging on by their five pairs of false legs and gripping the leaf with three pairs of true insect-legs they eat and **eat** and EAT.

The larva of *Antheraea polyphemus*, a North American moth, has been described as the most remarkable eating machine in nature. In the first 48 hours of its life it can eat 86,000 times its birth weight. Caterpillers have nothing else to do. They will eat until their skin gets uncomfortably tight then stop for a while and fix themselves to a leaf or a twig by spinning some fine silken threads. Then the too-tight skin bursts open and the hungry cater-piller creeps out ready to start all over again.

It will keep on munching for a few more days then when the new skin starts to feel tight the same thing will happen all over again.

A caterpiller may change its skin four or five times before it reaches its full size. Then it stops eating altogether and gets ready to start on its truly amazing metamorphosis.

A dish of fat, juicy caterpillers may not sound attractive to you but to some people they are a valuable source of protein. Many birds and small animals also survive **only** by eating insects. Caterpillers are an important part of their diet.

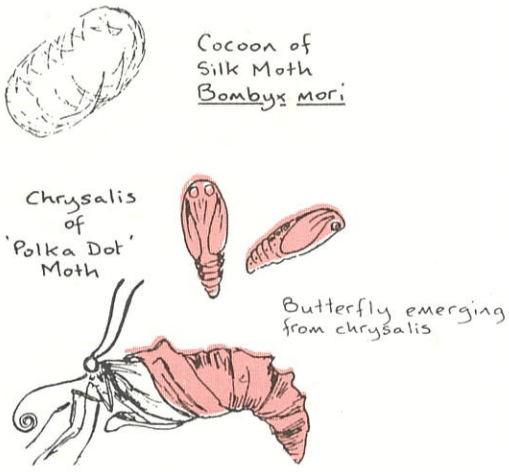
THE SLEEPING BEAUTY

Once the caterpillers stop eating they are ready to prepare for the next stage in their lives. Some spin a web of fine silken threads around themselves. Others hang head down from a twig that they fix themselves to by a silken pad. Some, like the fat black and yellow caterpillers of the hawk moth, *Pseudosphinxtetrio*, leave the bush where they have been feeding and crawl away to bury themselves in the soft earth at the base of a tree.

Now they are neither eating nor moving around. Soon their skin begins to change once more. This time it gets hard, like a plastic shell. It also gets very dark. The proper name for this hard shell is **pupa** or **chrysalis**. Pupa is the Latin name for 'little doll' or 'puppet' because that is what they look like at this stage.

Underneath the protective coat of this new, hard skin, the insect is going through a fantastic change. The caterpiller is disappearing and the adult butterfly or moth is beginning to form.

If you look closely at a chrysalis you will see that it already looks a bit like the body of a butterfly or moth. Under the shell are two large eyes. they are quite different to the eyes of the caterpiller that were so small you could hardly see them. There is the long tongue curled up tight under the insect's head. Even the six thin legs can sometimes be seen. On the back, folded tight like a parachute in its package are the wings.



When the chrysalis finally breaks open there is no sign of the caterpiller. In its place is the perfect insect or **imago**. It pushes its way out head first, holding on to the case with its fine new legs until it has enough strength to pull its body free.

At this stage it still cannot fly. Its wings look small and useless and very crumpled. Slowly the insect crawls away to hang from a leaf or a twig until the final changes take place. As fluid from its body flows into the crumpled wings they start to spread open and grow. It will take a while before the wings harden enough to be used. As soon as this happens the moth or butterfly will fly off to find itself a mate. Then this wonderful life-cycle will be repeated all over again.

BUTTERFLIES BY DAY

Some butterflies are so big and colourful they look like flowers that have grown wings and taken to the air. The orange Flambeau, *Dryas iulia* is one species that can often be seen moving like a bright flame through the garden. The Monarch butterfly, *Danaus plexippus*, is another.

The Monarch is just a bit larger than the Flambeau. Its dark orange wings are patterned with heavy black veins. Monarchs that live in the colder parts of North America, will migrate like birds to a warmer climate in the winter. Each year, millions of them fly south to one small area in Mexico where they cover the trees in such great numbers that the branches often break under their weight.

The Monarch
Danaus plexippus

In Saint Lucia, Monarchs remain all year round. They are found everywhere and can often be seen flying amongst the bushes on the side of the road. Their chrysalis is like a pale green jewel speckled with delicate spots of gold. Their larvae or

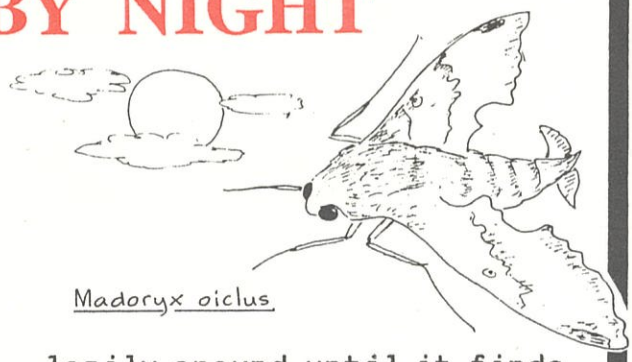
caterpillers are bright yellow with black bands. They eat the leaves of the **milkwood**, a pretty wild plant with bright red and orange flowers that grows in most parts of the world.

The White Peacock butterfly, *Anartia jatrophe*, is neither bright nor colourful but it is beautiful. Its wings are covered with a delicate lacy pattern in white, grey and black that makes it difficult to see among the wild plants on the roadside.

In some species of butterfly, the lower wings end in a long, sweeping tail. The dark brown Longtail Skipper is one of these. It likes to feed on the juice of rotten fruit.

About fifty species of butterfly have already been recorded in Saint Lucia and probably quite a few others are still waiting to be identified. Most of them were once fairly common and could be seen quite easily in gardens or open grassy places where there was water close by. Now there are not so many. One of the biggest threats to their survival is the heavy use of chemicals for clearing land. If the wild plants that they depend on for their food are wiped out then the butterflies will also die.

MOTHS BY NIGHT


Madoryx oiclus

In China, about 4,000 years ago, people discovered how to spin threads from the silken cocoons made by the larvae of the *Bombyx mori* moth. From this thread they were able to maufacture silk, the most beautiful and most expensive fabric in the world. For more than 2,000 years the Chinese kept this a closely guarded secret. But eventually the silkworms and the eggs were smuggled out of China and taken to other lands.

Like all caterpillers, the silkworm is very fussy about what it eats. Only the leaves of the mulberry tree will do. Wherever silkworms are cultivated these trees also have to be grown to make sure that they have a good supply of fresh food.

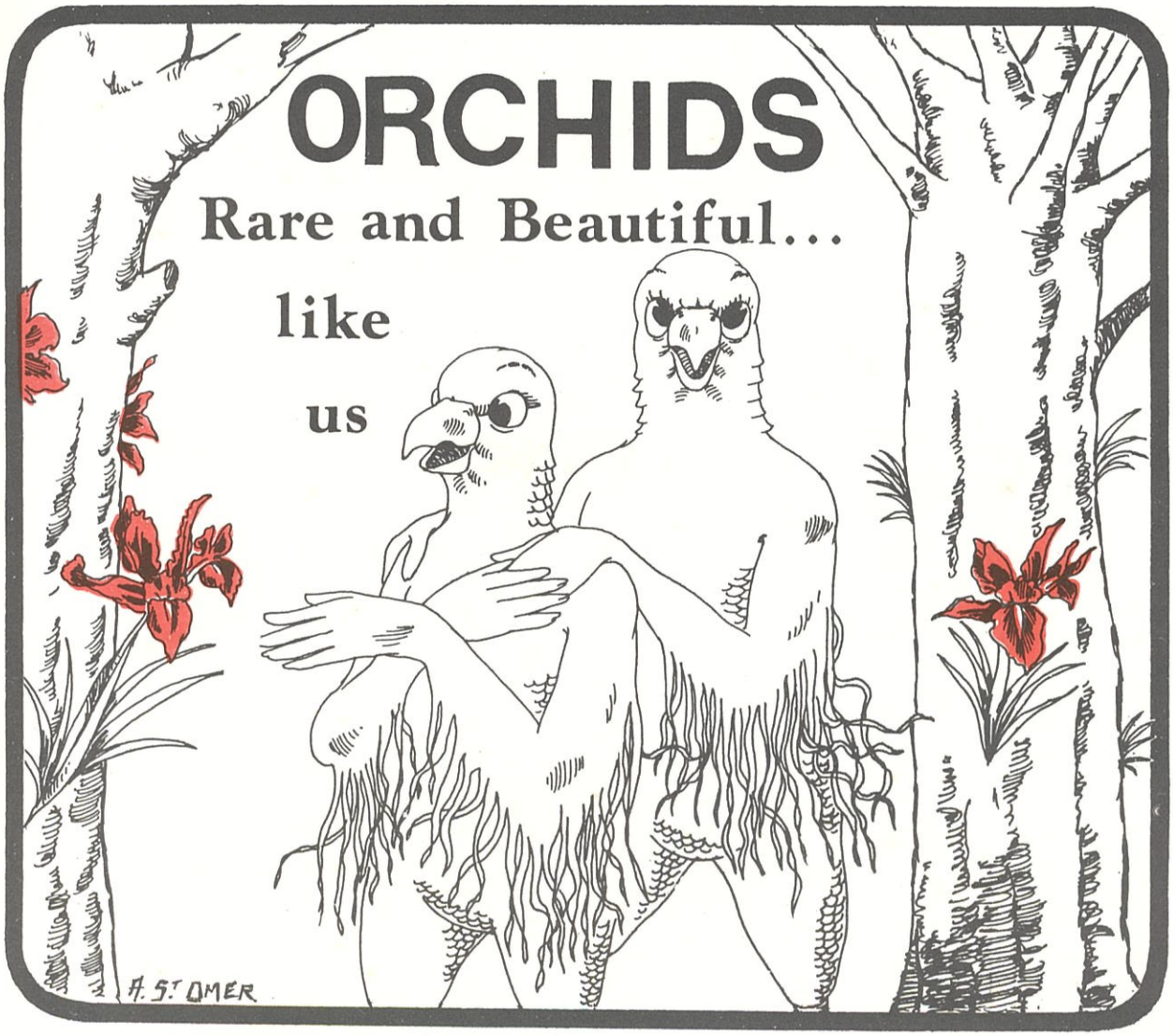
The largest moth in the world lives in the tropical forests of Australia and New Guinea. It is the Hercules moth, *Coscinoscera hercules*, whose wings measure over twelve inches from tip to tip. In Saint Lucia we do not have silkworms but we do have large moths.

The biggest is the Giant Sphinx, *Cocytius antaeus*, a member of the Hawkmoth family. Another large moth is the Black Witch, *Ascal-apha odorata*. The Black Witch has large, velvety, brown-black wings and can often be seen during the daytime. It will sometimes settle on the dark beams of a house where it becomes almost invisible. If it is disturbed it will flap lazily around until it finds a more convenient place to rest. Another moth that can be seen in the daytime is the Polka Dot or *Syntomedia epilais walker*. This moth only arrived in Saint Lucia in 1982, but it quickly made itself known. It no time at all it had eaten the leaves off all the oleanders from Cap to Vieux Fort. Other insects leave this poisonous plant alone.

Male moths are attracted by light. if you have your windows open at night they will fly into the house and dash themselves against the light until they die. When this happens the geckos or mabwyas have a great feast. They swallow the small moths whole but will nip off the wings of the larger ones and munch on their fat juicy bodies. If you leave an outside light on the toads or kwapos will wait beneath gobble up the insects as they fall.

In nature, everything is part of a food chain, from the tiny plankton that live in the sea, right up to Man. The moths and butterflies are part of this chain. Without them, many higher animals would be unable to exist.

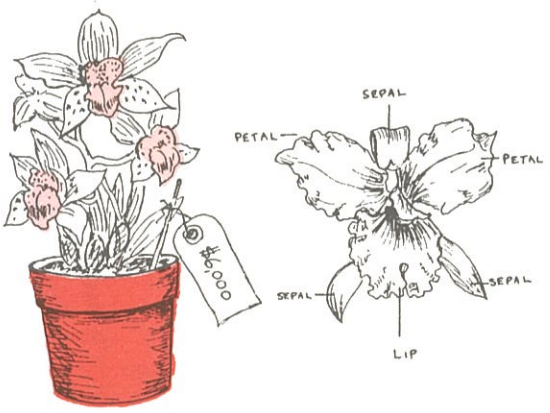
BUSH TALK



ORCHIDS

1. What are Orchids?
2. Up in the Trees
3. Climbing and Twining
4. Down on the Ground
5. In the Garden

WHAT ARE ORCHIDS?



Helen was trying to do a crossword puzzle in her Jacquot magazine. "Hey Ma!" she called. "Do you know what the most expensive flower in the world is?"

Mrs. Joseph looked up from her sewing. "Well, I don't know for sure, but I seem to remember reading that someone once paid $6.000 for an orchid. That was ages ago. Maybe then they were more rare than they are now."

"Six thousand dollars!" Helen shrieked. "Oh, wow! But they couldn't have been more rare then. I've seen a picture of orchids on that big board at the airport. You know, the one that tells you what things you mustn't take out of the island. That must mean that they are more rare now than they were before."

"You're right. I had forgotten about that," her mother admitted. "But I think sometimes people breed orchids. You know, mix one kind with another to make something unusual. Maybe that was why that one cost so much. Perhaps it was the only one of its kind in the world."

Helen had forgotten her puzzle. "I know we have wild orchids here, but I don't think I've ever seen one. The only kind I've seen are those pretty pink ones that Granny has in her garden. I thought the ones in the forest grew up in trees. Hers have roots in the ground just like other plants. She says when they grow like that they're called **terrestrial**. Hers are called *Vandas* and Granny says they came from Asia. I think they're pretty don't you?"

"Yes," replied her mother. "I do. But I saw some orchids once in a flower show that were fantastic. All brown and gold and yellow with spots on them. Like little bees. They had a funny name - *Oncidium* I think. That's the kind you were thinking about. The wild ones that grow on trees. They call them *Epiphytes*. That's the name for a plant that grows on another plant. We have lots of wild orchids here. You just have to know where to look

"It's fanny, isn't it," said Helen. "So many things growing here that we don't know about. Some of them might even disappear before we have a chance to know that they're there."

"That's true," her mother agreed. "You should check to see if the library has any books about orchids. Then you'll know what to look for."

UP IN THE TREES

Orchids belong to one of the largest of the plant families. It has over 30,000 species in it. They grow everywhere except in the Arctic and the Antarctic. The greatest numbers and varieties are found in the tropical rainforests. More than half of them live in trees. These are the *Epiphytes*. They send out a mass of roots that cling to all the cracks and crevices in the tree's bark but they do not harm it. They get all the moisture and food they need from the air. Some of it passes through their leaves but they also use the long hanging aerial roots that they grow specially for this. The tree is only used as a support.

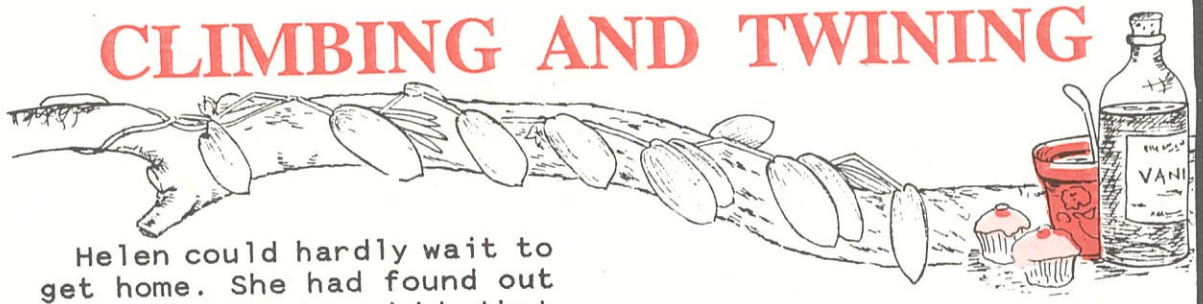
Nearly all large trees, especially those in the rainforest, provide a home for many other plants. Vines creep and twine around their trunks and *Bromiliads* and *Orchids* cling to every branch. *Bromiliads* are easy to recognise. They belong to the pineapple family and look very much like them.

The flower of the orchid has only three petals but the three sepals that grow right behind them make it look as if it has six. One of the petals is usually a different colour and shape to the others. It is also larger. It attracts the insects that will land on it in search of food. They use it like a landing strip. While these insects are pushing their way inside to get at the nectar, they brush the pollen from one part of the flower to another. This is how the orchid is fertilised.

The important thing is to get the right kind of insect to do the job. Sometimes even a very small humming-bird will do but the orchid must be wearing the right colours and patterns to make itself attractive to the bird. Some flowers pretend to be female insects so that they can attract the males of that species. One of the more common Saint Lucian orchids is ***Epidendrum ciliare***. It grows in large clumps, usually on the branches of a tree but it is also sometimes found on the ground. It has narrow green leaves and greenish-white flowers that have a delicate perfume. The lip is white with a raggedy fringe. This gives it the nickname of the 'eyelash' orchid. It belongs to a group of about a thousand plants called ***Epidendrums***.

Two more species of tree-dwelling orchids are the *Oncidium altissimum* and *Oncidium wydleri*. Both of these have sprays of small spotted flowers *O. wydleri* has yellowish-green flowers with brown and purple spots. *O. altissimum* has yellow and brown spotted flowers that look just like a swarm of bees. That is why it is called the 'bee orchid'.

CLIMBING AND TWINING



Helen could hardly wait to get home. She had found out something about orchids that she was sure her mother didn't know. When she got there she found her mother in the kitchen baking. Beside her among the other ingredients was a small bottle of essence.

"Come and help me Helen," her mother called. You can mix the batter for these cakes."

Helen picked up the little bottle. "Do you know what this is," she asked her mother.

"Of course I do, silly girl. It's vanilla essence. It comes from a plant, at least the **real** vanilla does. This is just an artificial flavour. That's why it's so cheap. In the market you have to pay about five dollars for just two vanilla pods."

"Alright," said Helen. "But what sort of plant does it come from?"

"I don't know." Mrs. Joseph smiled. "But I'm sure you do. I can see you're just bursting to tell me."

"I found it in that book I borrowed," said Helen. "It's an orchid, ***Vanilla planifolia***. The reason it costs so much is because it can only be pollinated by certain kinds of bees and hummingbirds. If you want to make sure it bears a good crop you have to go out early in the morning, before it gets too hot, and do the job yourself. You use a little stick or a toothpick. Can you believe that! Just imagine, if it is high up in a mango tree you would have to climb up there every morning to fertilise it."

Her mother laughed. "I can't believe they really have to do that. They must put the vanilla to grow on poles or something to make it easier."

"No," Helen was serious now. "It's a vine and it likes to twine around things. It's usually planted where it can climb up a tree, but I think they use small trees like the frangi-pani or the calabash. In the book it says vanilla came from Mexico. The Aztecs used it hundreds of years ago. It's not just pollinating by hand that makes it expensive, you have to wrap the pods up 'til they sweat and then ferment them like cocoa. If you don't do that they don't have any flavour."

"Sounds like a lot of work," said her mother. "But still it might be fun. Why don't you try to grow some on the calabash tree in Granny's yard? You might even find a friendly bee to give you some help when the flowers come out."

DOWN ON THE GROUND

The word **terrestrial** means earthly or 'belonging to the earth'. When we describe a plant as being **terrestrial** it means that it grows on the ground.

One of the best known of Saint Lucia's terrestrial or ground orchids is the *Habanaria monorrhiza*. It is also one of the tallest. It has a large head of white flowers carried at the top of a leafy stem that can grow up to four feet high. Another tall terrestrial is *Ponthieva petiolata*. This orchid has a slender stem two or two and a half feet long with small, greenish-white flowers.

Another down-to-earth type is *Cranichis muscosa*. This is quite a small plant with a spike of tiny white flowers. It seldom grows more than sixteen inches high.

The most eye-catching of all our ground orchids is *Spiranthes lanceolata*. It rises up from the forest floor crowned with a cluster of bright red flowers. In some species, like this one, the leaves of the plant die off before the flowers appear so that they seems to shoot straight out of the soil. Only when the blossoms are gone will the leaves grow back.

Not all terrestrials are quite as easy to see. Many are hidden away among the ferns and the moss and the creepers. Some are so small that you might miss them completely if you didn't take a second look. The *Epiphytes* or tree dwellers hold on to the tree with a tangled mass of roots. They feed through their leaves and the aerial roots that hang down toward the forest floor. Ground orchids or *Lithophytes* have fleshy roots or tubers instead. They use these to feed on the rotting vegetation on which they grow. A plant that does this is called a *Saprophyte*.

Like the small shells that you will sometimes find on the beach, some small orchids have to be examined closely before their beauty can be appreciated. Take the time to look around you when next you go for a walk. Not only at the large things that are easy to see but at the small and beautiful ones that may be hiding in the grass at your feet.

IN THE GARDEN

Orchids first appeared in Malaysia about 65 MILLION years ago. Gradually, perhaps on floating debris or as minute seeds called *Diaspores*, they spread to other parts of the world. At that time all orchids grew on the ground. Later on, as the forest floor became more crowded, some of them took to the trees. The 30,000 different species that belong to the orchid family are divided into about 800 groups or *Genera*. They belong roughly to two types; those that live in the trees (*Epiphytes*) and those that live on the ground (*Lithophytes*). There is still a third group that you could call 'those that live in the garden' or, in cold countries, 'those that live in hothouses'.

Even people who are not gardeners often become fascinated with the strange and beautiful shapes of orchids. They love to experiment with them. They pollinate them by hand, fertilising one type of flower with the pollen of another. Always trying to create a more exotic or unusual bloom. some of the most spectacular and most colourful orchids are the ones grown by Man.

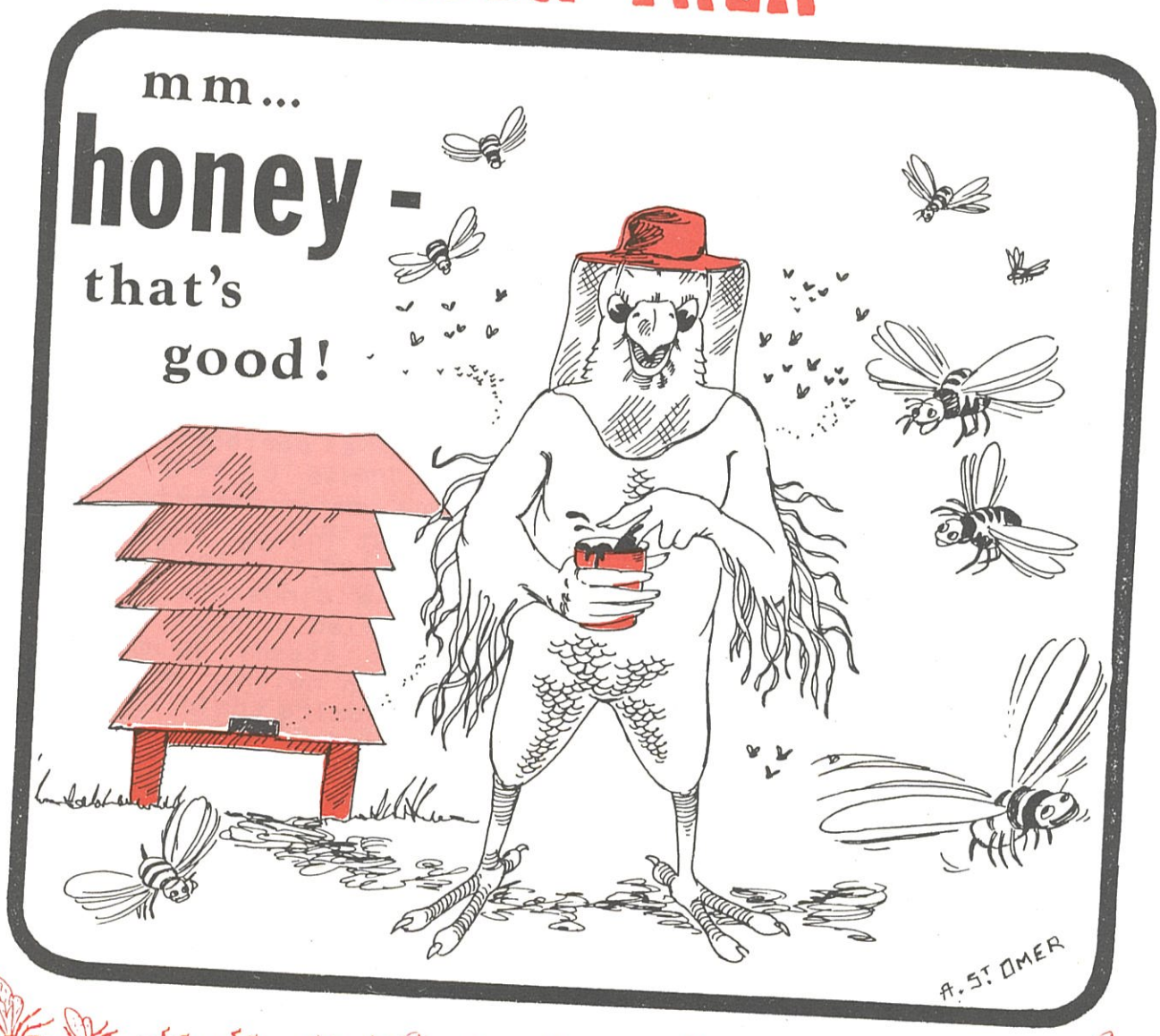
Vandas, *Dendrobiums*, *Cymbidiums* and *Odontoglossums* are all types of orchids that have been cultivated and cross-pollinated to produce new varieties. These are the orchids that fetch fabulous prices. One specimen of *Odontoglossum* sold for $6,000US and a *Cymbidium* called 'Rosanna Pinkie' was sold for $4,500US.

The largest orchid in the world is *Phragmipedium caudatum*. It is found in the forests of tropical America and has a flower three feet wide with petals eighteen inches long. It is probably of great interest to the botonists (people who study plants) but it would be much too big to put in a flower arrangement or pin on a dress. It is an object of curiosity, better left where it belongs.

Tiny orchids from our own forest, like *Pleurothallis testaefolia* are also better left where they are. They are a part of the environment in which they live. Like the tall trees on which they grow or the insects they provide with nectar, they are meant to be there.

Man can continue to produce his spectacular varieties of *Vandas* and *Cattleyas*. But first he has a duty to protect the other species from which they have all come.

BUSH TALK



BENEFICIAL INSECTS

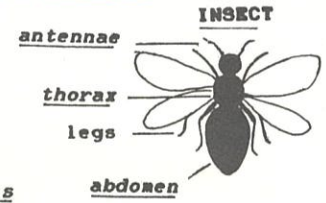
1. The Insect World
2. The Industrious Ant
3. Insects that Hunt
4. Too Many Legs
5. The Honeybee

THE INSECT WORLD


eggs


larvae


pupa or chrysalis



Insects make up the biggest group in the animal kingdom. They total nearly three quarters of all the animal species on earth. Scientists have already given names to about 750,000 different insect species and more are discovered each year. It is possible that altogether there might be about 2 MILLION of them!

All insects have an outside skeleton made of a hard substance called **chiton**. They have have six legs and a body divided into three parts. The first part is the head. It carries the feelers or antennae with which they hear and also the eyes. The second part is the **thorax** and it is made up of three sections or segments. This is where the insects three pairs of real legs are attached and its wings if it has any. The third or last part is the abdomen and this can be divided into as many as eleven segments. On most insects however they are hard to see.

Insects lay eggs that hatch into wingless grubs called larvae who spend all their time eating. When their skin gets too tight, they change it for a new one and carry right on. When they are ready to become adults they stop and a smooth shell forms around their body. Inside this shell which is called a *pupa* or *chrysalis*, the larva makes its final changes. Finally, the *chrysalis* splits open and a perfect adult appears. This change is called **metamorphosis**.

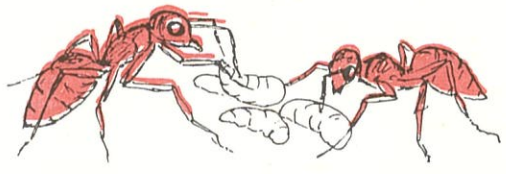
The first insects appeared on earth 100 MILLION years before the dinosaurs. They swam, crawled or flew about in the hot, steamy, primeval swamps with neither man nor beast to admire their lovely colours and shapes. There were dragonflies with jewel-bright bodies and shimmering twelve inch long wings. There was a creature called *Phyllo-blatta* who looked like a cockroach, another, named *Gerarus*, the ancestor of the grasshoppers and crickets. But there were no moths or butterflies, no bees or ants. The insects that would eventually change to become these species still had a long way to go.

As the insects' environment changed they would adapt and take on new shapes and new habits. A new species of plant would attract a new kind of insect to feed on its leaves. A new species of bird might then appear that would eat this particular insect. This bird would attract a new type of louse or tick that would live among its feathers. As the different species of plants and animals increased, so did the insects.

THE INDUSTRIOUS ANT

Ants are one of the most hardworking insects in the garden. All day long they scurry around gathering food to take back to their nest. Many plants have small insects on them called **aphids**. The ants milk these aphids in the same way as we milk cows. They get a sweet, sticky stuff from them called 'honeydew'. They also gather nectar from the flowers and juice or **sap** from the plant stems. They carry all this back to the nest where they feed it to their queen and the ant larvae. If there are dead insects around or perhaps a lizard or even a mouse, they will remove the corpse bit by bit and take this away too. What they do not use immediately they store for later.

The busy worker ants are all females but they never have any young ones. Only the queen, who is bigger and fatter than all the others can do that. She may live for ten years and will spend her whole life in a special chamber inside the colony. The worker ants clean and feed her. They collect her eggs and carry them off to another room where they are cared for until they hatch. The queen is like an egg machine. The only way the colony can grow is from the eggs she produces.



WORKER ANTS, LOOKING AFTER ANT LARVAE

Some of the eggs will hatch into queens or males. These ants have wings but they will still remain in the nest and be fed by the workers until it is time for them to mate. Then the new queens will fly into the air followed by the winged males. This is called **swarming**. Many of these flying ants will be gobbled up by birds. Even if they are not, the males will die as soon as the swarming is over. The surviving queens fall back to earth and shed their wings. Then they burrow into the earth to start a new colony.

In the forest, ants have a very important role to play. They help to break down the dead wood of fallen trees so that the material can be returned to the soil and used again. They also help to get rid of the bodies of small mammals just as they would in your garden.

Some ants cultivate their own food. You may have seen the leaf-cutter ants cut little pieces out of leaves with their sharp pincers. Watch them carefully, they will walk away holding the piece of leaf but they do not eat it. They take it back to the nest and chew it up to be used as compost. On this bed of compost they grow a special kind of fungus that they use for food. If a queen ant leaves the nest to set up a new colony, she will take a little bit of this special fungus with her so that she can start her own production.

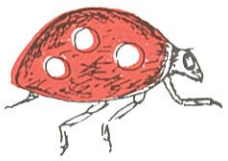
INSECTS THAT HUNT

The insects that do most damage to the farmers' crops are vegetarians. That means that they only eat plants. Not all insects are plant eaters, some of them are **carnivorous**. That means they eat meat. In the same way that humans get their meat from other animals, they get theirs from other insects. There are many carnivorous insects but we will look at just a few of them.

The pretty little ladybird is one. This insect can be red with black spots, or black with red spots or even yellow with black spots.

Ladybirds belong to the *Coccinellidae* family and are found all over the world. Their chief food is the very same insect that the ant uses to get its honey - the aphid. No-one likes to have these pests on their plants. If they would encourage the ladybirds they would keep them under control. The ladybird larvae are small dark grubs with white or yellow spots. They also eat aphids just like their parents. Another carnivorous insect is the dragonfly. It is a member of the *Odonata* family. Dragonflies now are smaller than in prehistoric times but they still do a good job of catching flies and mosquitoes. Dragonflies lay their eggs in water and when the larvae hatch out they feed on small marine creatures like tadpoles or mosquito larvae. When they are ready to become adults

LADYBIRD

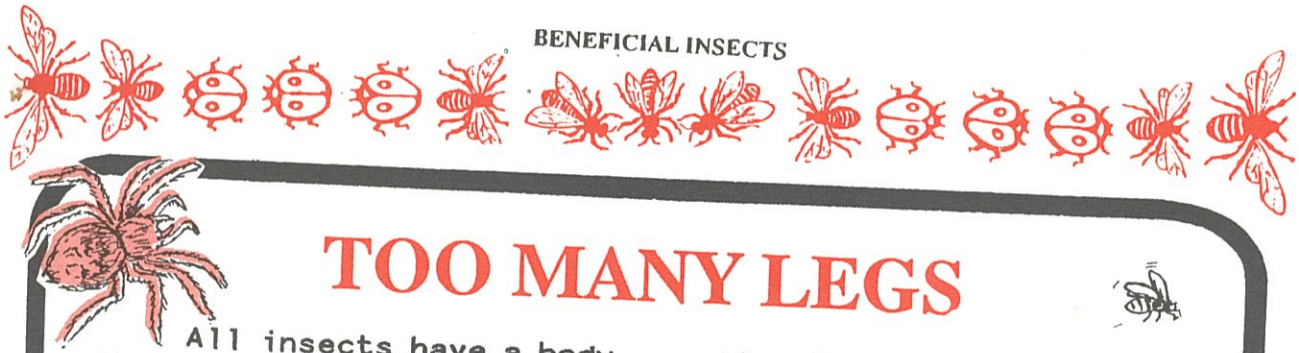


ANT LION

they leave the water and climb onto a twig or the stem of a plant. They stay there until metamorphosis is complete. Then their old dry skin splits open and the dragonfly crawls out. Its wings are still crumpled and soft so it will stay there in the sun until they have unfolded and hardened. Then it will fly away to skim over the surface of ponds and rivers looking for food.

Some beetles are also carnivorous. Many of them search through animal dung for juicy maggots. Others will bury the body of a dead rat or a bird to provide food for themselves and their family.

One type of carnivorous insect is rarely seen even though it is very common. It is the ant lion. As an adult it is a pretty pale green creature with shining wings and large eyes rather like a dragonfly. The larvae are small grey grubs that build traps in the ground to catch unsuspecting ants. If you look around in the yard you may see some small round spots that look as if someone has pressed their finger down in the dust. These are the ant lion's traps. If you are patient you may even see an ant fall into one and be pulled under by the waiting ant lion.



TOO MANY LEGS

All insects have a body that is divided into three parts and three pairs of legs. So, where do spiders fit in? Those creatures that spin webs in dark corners and scuttle away when you open a cupboard. If you have ever looked closely at one then you will realise that they have **eight** legs not six and their body is made up of **two** parts not three. They have no wings or antennae and instead of two large compound eyes they have six or even eight simple eyes. The family they belong to is the *Arachnidae* and their close relatives are not bees, ants or butterflies but scorpions, ticks and CRABS!

Like snakes, bats, toads and a few other unfortunate, misunderstood creatures, spiders seem to bring out the worst in people. Sometimes even their webs are enough to make a person shudder as if they really believed they could be caught in it themselves and wrapped up, like a tasty morsel of meat, to be eaten. Of course this is exactly how spiders catch their prey but its usually flies thay are after, not humans!

Not all spiders spin webs. The trapdoor spider makes a silk-lined burrow in the ground into which he drags his victim. The hunting spider hides under the bush and springs out on his prey. On just one acre of uncleared land there may be a MILLION spiders. Just think of all the flies they could eat.

The large hairy spiders that live in the bush in Saint Lucia are often mistakenly called **tarantulas** but the true tarantula *Lycosa tarantula* is found only in Europe. To cure its bite you are supposed to do a dance called the taran-tella for about three days! The variety found here can bite but its bite is not deadly.

Female spiders protect their eggs by wrapping them in a strong silken case or egg sac. Some spiders fix this to the web, others carry it around with them. When the young spiderlings hatch out they are exactly like their parents only much smaller. When they are ready to go off on their own they spin a soft silk thread that they use as a parachute. The wind will blow them away on it to find a new hunting ground.

From the beginning of time, nature has worked to create a balance between all living things. More and more Man is upsetting that balance. By using chemicals to get rid of one insect pest he may, without knowing it, kill off many others. Even those he finds trouble-some may be the food that some other creature depends on for its survival.

Chemicals are not always the answer. In the same way that insects adapt to a changing environment, they also adapt to the poisons that are used to control them. Man has to learn to use Nature, not fight it.

THE HONEYBEE

Bees belong to an insect family called the *Hymenoptera* that has about 19,000 species. They feed on the nectar of flowers that they gather with their tube-like mouths and on the pollen that collects on their furry bodies. As they fly around, they carry the pollen from one flower to another. By doing this they fertilise or pollinate the flower so that it will bear fruit. Ants and some other insects also do this but the bee is the most important. When the bee population is low the farmer gets poor results from his fruit trees. When there are more bees his fruits will also increase.

Most bees live alone. They lay their eggs in little compartments or cells under the ground or in a dead branch. they don't stay around to look after their young. Instead they make sure that there is a good supply of food handy so that when the eggs hatch the larvae will have enough to eat.

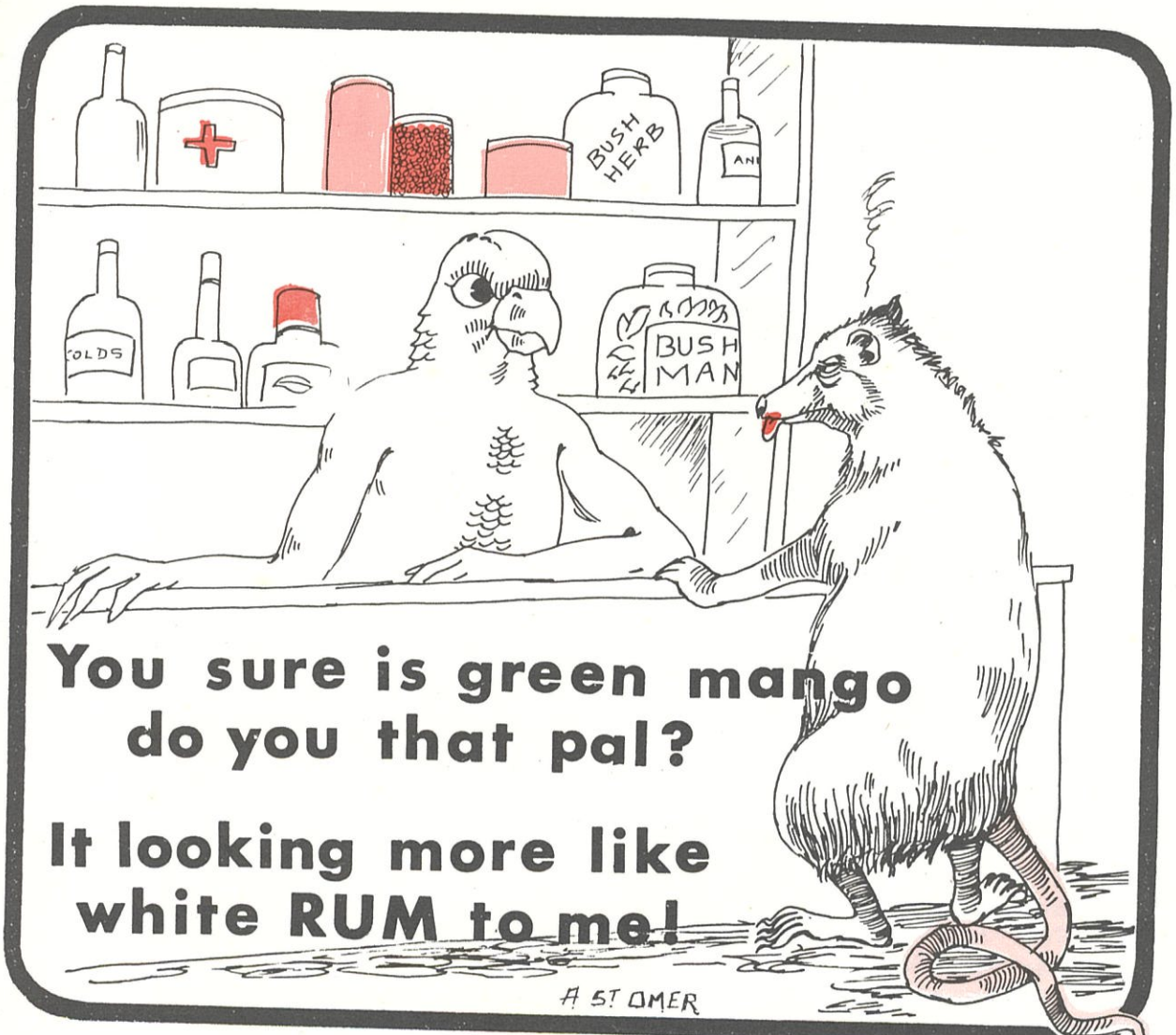
The honeybee is one of the few species that lives in a colony. The queen is the only fertile member of the hive and she can lay as many as 1,500 eggs in a day. She is cared for by worker bees who feed her with a special liquid secreted by their own bodies.

Worker bees are infertile females, like the workers in an ant colony. There can be as many as 60,000 for each queen. These workers also feed the males or **drones** for the first week after they hatch. After that they have to feed themselves but they are allowed to remain in the hive until mating time. The males that manage to mate with the queen die very soon afterwards. The others go back to the hive but they are left in a corner without food until they starve to death. Then the workers drag their bodies to the door and push them out.

Bees make a waxy substance from the pollen they gather. They use this to build small six-sided cells to keep the eggs and to store honey. The honey is used to feed the larvae when the eggs hatch and to keep the hive going when food supplies are low. Other creatures, including man, often rob the hives and take the honey

When farmers use chemical sprays on their land, bees are often among the victims. If the chemicals fall or are blown onto the flowers where they feed then the poison is taken back to the hive and fed to all the other bees in the colony. Even the queen will get a dose. Chemicals can't tell the difference between a good insect and a bad one. That is why it is always better to use natural methods of pest control.

BUSH TALK



HERBAL REMEDIES

1. Pills and Potions
2. Coughs and Colds
3. Aches and Pains
4. Warts and Worms
5. A Nice Cup of Tea

PILLS AND POTIONS

Helen had a cold. Her head ached and she was sniffling so much that her mother decided to keep her home from school. She made some bush tea from herbs, boiling the leaves gently for a while then straining off the water. She sweetened it with honey and took it to Helen. "Here, drink this. It will get rid of your fever and help the headache go away."

"Oh Ma! Do I have to?" Helen wrinkled up her nose and pushed the cup away. "Monica's mother says now you can get proper medicine for everything at the drug-store it's time people gave up these old-time things. Can't I just take a couple of aspirins or something?"

Mrs. Joseph put the cup gently back into her hand. "Maybe if you had flu," she said, "but not for a little fresh cold. Drink the tea it will make you feel better. If it wasn't for these old time things as you call them, we wouldn't have half the medicines you buy at the chemists. How do you think the doctors found out about them in the first place? When they saw people using a plant to cure some sickness they would take it to a laboratory and check to see what it had in it. Then they would make it up into a pill or some liquid that was easy to take. Scientists believe there are cures for every illness in the plants and trees of the rainforest. Trouble is, it takes time to study these things and a lot of the forests are being destroyed before anyone has had a chance to examine the plants that grow there."

"I see what you mean," said Helen. "People must have got sick long before they could go to a shop and buy things like aspirins or cough syrup. But who showed them what plants to use, and how did they know how much to take?"

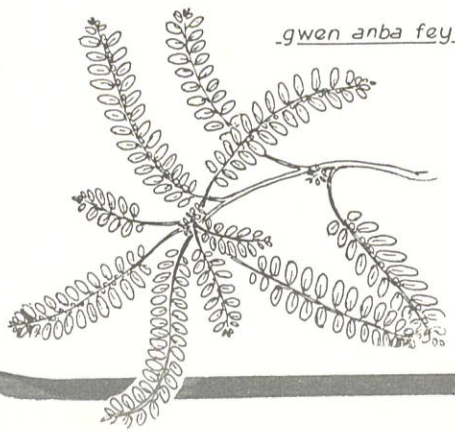
"It was simple," replied her mother. "There were people in every community who spent their whole lives studying plants and learning how to use them. You would go to them just like you go to a doctor and they would tell you what to take. But they hardly ever wrote anything down."

"I heard that someone has collected samples of all the plants in Saint Lucia and made a list of the ones that are used to cure things," said Helen. "They'd better hurry and make sure they have them all there. The way I see people clearing their land with gramoxone and all that other stuff there soon won't be any herbs left to study here either."

COUGHS AND COLDS

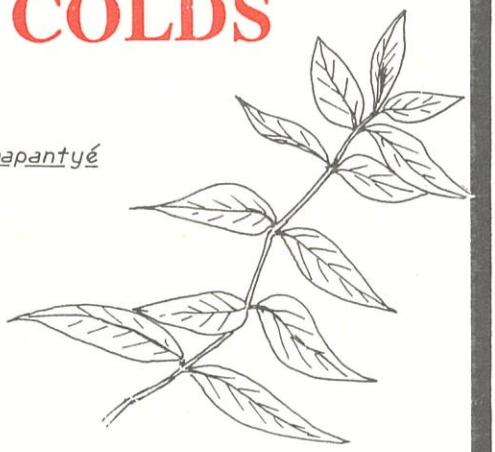
Many people in Saint Lucia take bush tea when they have a cough or a cold. Usually they mix several herbs together but one that is always used is *Leonotis nepetaefolia*, a member of the *Labiatae* family. This plant is very easy to recognise and can be seen growing on waste ground all over the island. It is the leaves that are used to make the tea. When the flowers die they leave behind a large, round, spikey, brown seed pod and it is this that gives the plant its local name, gwo pompom.

Other herbs that are used for colds are tabac djab, flerry nowel, chapantyé and a relative of the wild spinach or zépinard called 'man-better-man'. The leaves of all these plants can be boiled together in water to make a cure for a cold. Sometimes gwen anba fey blan will also be added because it is good for chills or fevers. These plants grow along the roadside but unless you have studied them well and know their names it is better to let someone else gather them for you.



gwen anba fey

chapantyé



Another ingredient that is sometimes added to this tea is lemon grass or citwonel. It has narrow, greeny-grey leaves with a strong lemony smell. Even if you are not sick you can use them to make a delicious refreshing drink by soaking the cut up leaves in boiling water. It is best to use scissors or a kitchen knife to cut this grass because the leaves are sharp and will cut **you** if you're not careful!

Fresh lime juice with hot water and plenty of honey is another remedy that is often given for colds. Honey is very soothing for coughs and sore throats and most people are happy to take it. If there is a bush of *Sambucus simpsonii* or *la fle siwo* close to the house a cough syrup can be made from its tiny white flowers. In Europe and America this bush is called **elderberry**. It has clusters of purple-black berries about the size of currants that are used to make cough medicine and also to make wine. In the Caribbean the bush does not bear fruit but you can make wine from the flowers.

ACHES AND PAINS

How many of you can honestly say that you have never had a bellyache after eating too many green mangoes? Perhaps you were given a dose of milk of magnesia or castor oil made from gwen sakwisti, but you could have had a tea made from the leaves of the guava bush instead. Ziwof glo or *Ludwigia octovalvis* to give it its proper name, would also have made you feel better. Or a tea made from the leaves of the chadon benni, a useful little plant that is good for coughs and worms as well as stomach ache. If none of these could be found, a tea made of ginger root would probably have worked just as well.

For a bellyache caused by gas, thyme is the herb that is usually prescribed. Either *Coleus amboinicus* (gwo diten), or *Thymus vulgaris* (ti diten), whichever you have close by. Sometimes of course the bellyache can be caused by eating bad food and then there is diarrhea as well as stomach cramps. In this case, the plant you need to find is the maho nwé, or *Cordia martinicencis*. You may have trouble finding this one so in the meantime just stew up a few more guava leaves - they should work just as well.

kawaktè lézom

maho nwé

zèb gwa

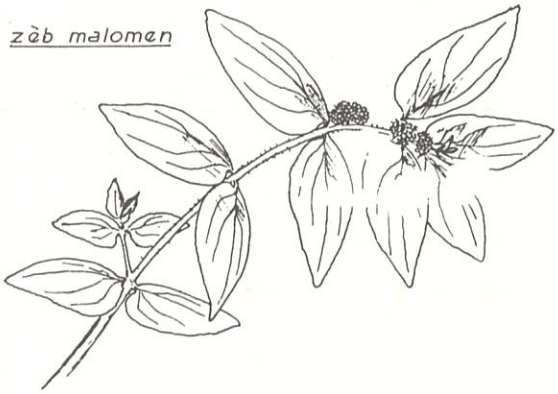
Water grass or zèb gwa is also used in some remedies. Its proper name is *Commelina elegans* and it has small but pretty, sky-blue flowers. If you have kept rabbits or guinea pigs then you have probably gathered it to feed to your pets. It is also used as a cure for high blood pressure and if you have an inflamation, a poultice of zèb gwa is supposed to ease the pain.

There are also herbs to cure abcesses or swellings caused by a blow. In patois this type of illness is often called a 'bles'. The herbs used to treat it are zeb a zedjwi and kawaktè lézom. Both are quite easy to find but if you have managed to get hold of some maho nwe then you can use that instead.

Unless you are pretty sure ou know **why** you have a pain in your stomach or anywhere else, it is always wise to go to the doctor.

WARTS AND WORMS

zèb malomen



In most parts of the Third World, worms are a really big problem especially with small children. When a house has no piped water it is difficult to keep children's hands clean. The worms' eggs are often carried with dirt or unwashed fruit straight into the child's mouth. There are many medicinal plants that are used to treat worms, most are well known.

The local name, zèb a vè, tells you exactly what kind of herb ***Chenopodium ambrosioides*** is. It is not easy to recognise but once you have found it there is one way to be sure. Take a few leaves and roll them between your fingers. The smell is not really unpleasant but it is very strong. Once you have smelled it you will not easily mistake it for anything else. Another herb that is used in Saint Lucia to get rid of worms is bwa kabwit or ***Aegiphila martinensis***). Guava leaves are also supposed to work and so is a tea made from the blessed thistle or chadon benni, that we have already mentioned.

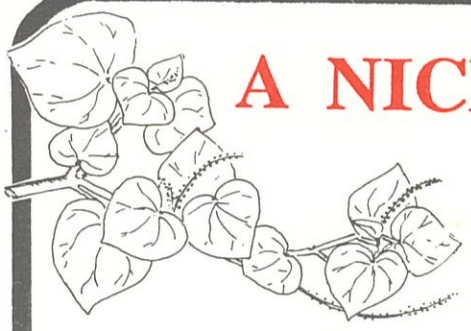
People once thought that warts were caused by touching toads or other creatures with 'warty' skins. Nowadays we know better but people still get warts and sometimes they still use the old remedies for getting rid of them. The christmas candle or kasialata is probably the best cure. the leaves are pounded into a paste and squeezed to get out the juice. The juice is then put on the wart every day until it disappears. Other skin problems can also be treated with this liquid. When you have got rid of the lumps and bumps you can soften your skin by rubbing it gently with the mashed up leaves of the kaka mèl (***Clidema hirta***).

If the spots on your skin are caused by a disease like measles, then the herb you need is zèb malonmen (***Chamaesyce hirta***), used in the same way. If it is just a rash caused by the heat or something you have eaten try using soursop or ***gliricidea*** instead.

For burns, sunburn, lumps and bumps, the jelly from the leaf of the *Aloe vera* (la luwe), is supposed to work wonders.

zèb a vè

A NICE CUP OF TEA



zèb kuwess

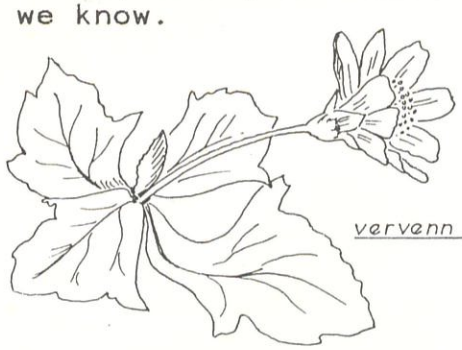
This last group of herbs is probably the biggest of them all. It includes the leaves of trees like orange and soursop as well as many true *herbs. You don't have to be sick to enjoy a cup of bush tea. The young leaves of the orange tree or the sour orange, zowan cee, are often used to make a tea or lowanzet and kowosol leaves are well known for their soothing effect. The sweet-smelling basil or 'basilik' is also used to make tea and the mint which belongs to the same family is used alone or it is crushed and added to green tea to give it a special flavour.

The large oval leaves of the bay tree, bwa den, with their spicy smell are used a great deal to flavour foods. They can also be used to make tea and are especially good when they mixed with a small piece of cinnamon bark.

Many of the herbs are used to make a cold drink that is called a cooling. Vevenn kawayib, vevenn lachay wat and kasialata are all used in this way. So is the little 'shining bush', zèb kuwess with its bright green heart-shaped leaves.

The proper name for lachay wat is *Stachytarpheta cayennensis*. It is one of the most common of all our wild flowers. It grows along the roadside and is easy to recognise by its bright blue blossoms. Vevenn kawayib is also easy to find. It has yellow daisy-like flowers and grows close to the ground. Do not confuse it with the tall plant that has the same sort of flower on it. This is *Wedelia calycina* or sousouyou.

There are still many herbs that we have not mentioned. Some of them are already being used by doctors to treat people. The peri-winkle, kaka poule, contains a substance that can be used for the treatment of leukemia and certain kinds of cancer. Curare the plant poison used by Amerindians on their arrows, is now used as an anaesthetic. How many other wonder drugs are hidden in the leaves, stems or roots of wild plants? If we keep on clearing for development, replacing our natural plants with others that are more showy, we may lose more than we know.



vervenn kwayib

* A herb is a plant that dies off each year scattering seeds that will eventually grown into new plants.

BUSH TALK

St. Lucia Naturalists' Society St. Lucia Naturalists' Society

THE SAINT LUCIA NATURALISTS' SOCIETY

1. The SLNS
2. How to Become a Member
3. The Environment
4. Saving Our Turtles
5. Field Trips are Fun

St. Lucia Naturalists' Society St. Lucia Naturalists' Society

SLNS

THE SAINT LUCIA NATURALISTS' SOCIETY

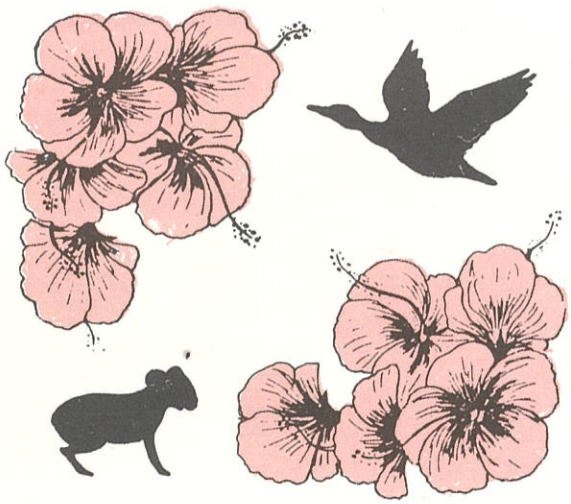
The Saint Lucia Naturalists' Society was formed in 1978. It was started by a small group of people who understood the need to protect and conserve Saint Lucia's plants and wildlife.

The Society now has more than a hundred members. It has been actively involved in many projects directed toward saving the island's habitats. Regular monthly meeting are held at the Central Library Castries with lectures, guest speakers films and slide shows. Anyone is welcome to these meetings. The Society hopes that it can help Saint Lucians to become more aware of the fragility of their environment.

On a small island such as ours, many of the endemic (local) species of plant and animal life are unique. Indeed some of them, like the Saint Lucia Parrot and the Maria Island's Lizard are found nowhere else in the world. But on a small island, the pressures of development are greater than they would be in a larger more developed country. This makes the need for strong protective measures even greater.

That is one of the reasons that the Saint Lucia Naturalists' Society is always trying to increase its membership. It wants young Saint Lucians to rally to the cause of environmental protection. Our field activities play an important part in helping to educate members. At the same time these organised field trips allow them to enjoy being part of an outdoor activity.

Our aim is to make sure that wherever possible, the animals, birds and plants of our lovely island, remain undisturbed in their natural habitat. They are all a part of the island's history and heritage. They were there in the past and most of them have been there for us to enjoy during our time. They should also be there for future generations. We have a responsibility to see that it is so.



St. Lucia Naturalists' Society

St. Lucia Naturalists' Society

HOW TO BECOME A MEMBER

Anyone can become a member of the Saint Lucia Naturalists' Society. If you are interested, you can fill in the application form at the back of this book. When you have completed the form you should send it to

The Secretary,
The Saint Lucia Naturalists' Society,
c/o The Saint Lucia National Trust,
P.O.Box 595,
Castries,
St. Lucia.

According to the rules of the Society, your application for membership will be considered at the next meeting of the Committee and you will be notified of their decision. Membership fees are;

Active Membership.....$20.00 a year
Associated Membership.....$10.00 a year
Life Membership.....$300.00

JUNIOR MEMBERSHIP.....$5.00 a year

STUDENTS.....$5.00 a year

the Saint Lucia Naturalists' Society

THE ENVIRONMENT

Take a careful look at a map of the world. It may surprise you. It is very easy to locate America, Canada, England, Russia or even Australia but can you find Saint Lucia? On most maps, Saint Lucia and most of the other islands of the Lesser Antilles are just tiny dots in the Caribbean Sea.

The United States of America is more the 15 THOUSAND. times the size of Saint Lucia. Its population is **1,643** times as much as ours. This means that in America there are only 23 people for each square kilometre of land. In Saint Lucia there are 227 people for every square kilometre. Almost **10** times as many.

Because of this situation, our few natural resources must be very carefully managed. From the top of Mount Gimie to the waters around our coast we have many different environments. The rainforest, home of our National Bird; the valleys and uplands with their volcanic formations; the sandy beaches; the rocky shores, the mangrove swamps; the sea-grass beds and the coral reefs. All of these provide habitats for many different species of plant and animal life that are important to us in one way or another. Our resources are all in short supply. Without careful management they could be lost forever.

Once we understand how small and fragile our environment is we should look at the worst thing that could happen to it. Imagine what will happen if we continue to destroy our forests at the rate of 2% a year; if farmers continue to clear steep slopes to plant crops; if we allow the indiscriminate use of agro-chemicals; if we continue to pollute coastal waters with untreated sewage, if we persist in allowing good agricultual land to be used for urban development, then our very limited natural resources will soon be used up completely.

Most of them, like the forests, are non-renewable. Without proper management they will quickly become unavailable to us. We must take care that this does not happen. Although our natural resources are limited, many people still depend on them. Think of the problems we will face if we continue to kill our birds, mine, our beaches, cut down our forests! Our small and sensitive environment can quickly become exploited.

Environmentalists realise how fragile our environment is and know they must always be concerned about anything that affects it. We must make sure that we ourselves do not do anything to destroy it. Saint Lucia's future is in our hands. We must save our beautiful island from becoming a desert.

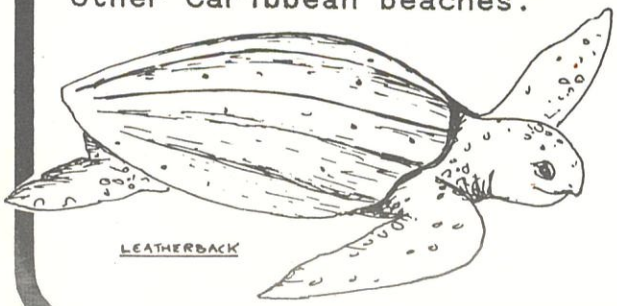
Giles Romulus, S.L.N.S.

SAVING OUR TURTLES

Grande Anse Beach is one mile long. It lies further south than Castries on the eastern side of the island. To get there it is usual to take the road from Castries to Union and then go on east to Babonneau and south to Desbarras.

The journey only takes about an hour but the road is as full of twists and turns and ups and downs as a roller coaster ride. When you arrive there is no shelter, no water, no T.V. but the residents will turn out to give you a warm welcome. Cows visit the beach camp even during the night and the crabs and mosquitoes generously share their blankets with you!

From April to July it is not surprising to find groups of adventurers, young and old, camping out on the beach. These are the 'turtle watchers' who spend their evenings walking from one end of the beach to the other looking for turtles. The leatherback turtles that visit this beach can weigh over a thousand pounds and be more than five feet long. Apart from Grande Anse, the leatherback, *Dermochelys coriacea*, visits only four other Caribbean beaches.



Turtle watches are not as casual as they appear. The campers are actually helping to save the lives of these huge sea creatures. By patrolling the beach they can make sure that their nests are not disturbed. They can also prevent the turtles being interfered with as they crawl up the beach to lay their eggs. Leatherbacks feed on jellyfish so their flesh can be poisonous to man. In spite of this some foolish people still kill these defenceless, gentle giants.

Turtle watchers are often scientists who measure the turtles and draw pictures of their tracks. Sometimes, when measuring tapes are scarce, campers even become 'inventors'. One student who took part in a turtle watch was able to measure a track with her feet!

Not all turtles lay their eggs at Grande Anse. On one occasion workmen at Vigie Airport were surprised to see dozens of little Hawksbill turtles running around in the grass at the edge of the runway. They had hatched out from a nest brought in with a load of sand.

Leatherbacks are fussy about where they lay their eggs. They prefer wide sandy beaches where the water is rough and there is plenty of bush at the back of the shore. Grande Anse has all of these things. If it is destroyed the leatherbacks will probably not return to Saint Lucia.

Marina Mitchell - S.L.N.S.

FIELD TRIPS ARE FUN

Interested in birds? No problem! Want to climb Mount Gimie to search for orchids? No problem! Want to learn about Saint Lucia's animals and plants? Still no problem!

One of the main aims of the Saint Lucia Naturalists' Society is to study and enjoy the island's wildlife. Take part in one of the Society's field trips or come to one of the regular monthly meetings where we show slides and films of Saint Lucia. An important function of the Society is to make everyone aware of their environment. The Activities Committee does this by arranging field trips and meetings. They also prepare a newsletter full of interesting news and views. One field trip went to Esperance Harbour to study mangroves and sea grass beds. Another to the Canaries River allowed members to see freshwater animals and plants now found only in a few of our cleaner rivers and streams.

During the past ten years the Society has organised trips to almost every corner of the island. One of the most successful was to the Maria illands. If you have never seen the kouwess, the world's rarest snake (quite harmless to man) or the Maria Island's Ground Lizard, this is one place you should visit. If enough people are interested, the Society can arrange a trip for you.

Most field trips are great fun. If we are by the coast we always try to allow time for a cooling sea bath after our hike. If you think Reduit or Anse des Sables are Saint Lucia's best, let us show you how wrong you are. There are dozens of other beautiful beaches.

When you have been on a field trip, why not share your experience with the other members. We are always looking for articles for our newsletter. If you have never written for a magazine before, don't worry, there is always a first time! The newsletter is **FREE** to paid up members.

Monthly meetings are held on the **FIRST** Wednesday of **EVERY** month at the Castries Central Library. There is usually a guest speaker who will talk on some aspect of the environment. Everything is examined - from hummingbirds to sand-mining, from snakes to snails! Often there are slides or a film too. Why not come along and check it out? You know it makes sense.

Mark Eckstein - S.L.N.S.

QUESTION TIME

REPTILES –

1. How many different species of snake are found in Saint Lucia?
2. Why are there so few iguanas left in Saint Lucia?
3. Saint Lucia has a rare species of ground lizard found nowhere else in the world. What is its scientific name.
4. Why do geckos shed their tails?
5. Which one of Saint Lucia's frogs has no free-swimming tadpole stage?

GARDEN FLOWERS –

1. Name one common vegetable that belongs to the same family as the hibiscus.
2. How did the bougainvillea get its name?
3. How does the ixora make new plants?
4. Why do most insects leave the oleander bush alone?
5. The large black and yellow caterpillars that eat the leaves of the allamanda also attack another tree. What is it?

MOTHS AND BUTTERFLIES –

1. Moths and Butterflies belong to the second largest group of insects. Which is the largest?
2. All insects go through a process called METAMORPHOSIS. What does this mean?
3. What happens to a caterpillar when it stops eating?
4. How many species of butterfly are found in Saint Lucia?
5. What is the name of the largest moth in the world?

ORCHIDS –

1. What is an EPIPHYTE?
2. What is the scientific name of the 'eyelash' orchid?
3. Real vanilla essence comes from the seed pod of an orchid. What is the orchid's name?
4. What does the word TERRESTRIAL mean?
5. Where is the largest orchid in the world found?

BENEFICIAL INSECTS

1. How many different species of insects are there?
2. When the queen ants are ready to mate they fly into the air followed by the males. What happens to the males afterwards?
3. Why are ladybirds good insects to have in the garden?
4. The spider is not an insect. What family does it belong to?
5. Why are honeybees important for fruit trees?

HERBAL REMEDIES

1. Why are rainforests important to the scientist?
2. Name two herbs that are used to cure a cold.
3. Chadon benni is used to cure stomach ache. What else is it good for?
4. Which plant gives relief from sunburn?
5. A true herb is a plant that dies after it has flowered. How will a new plant grow?

SAINT LUCIA NATURALISTS' SOCIETY

1. When was the Saint Lucia Naturalists' Society formed?
2. How much does it cost to become a junior member?
3. At what rate are Saint Lucia's forests being destroyed?
4. What threatened turtle species nests on Grand Anse Beach?
5. Name some of the places that members of the Naturalists' Society have visited on field trips.

ACKNOWLEDGEMENTS

From the very first issue of Bush Talk as a monthly newsletter in November 1981 its publication was entirely dependent upon the generosity of local Businessmen and other concerned individuals. In the past Geest Industries Barclays Bank PLC, A.F.Valmont & Company, Bryden and Partners Ltd., Crick's Funeral Service, Sunbilt, Monplaisir Supplies Ltd., National Solar Heating, Environmental Engineering, Star Agency, Couples, the Anse Chastanet Hotel, the Green Parrot Noah's Arcade, the St. Lucia Naturalists' Society, the National Trust, ECNAMP, the Caribbean Research Centre, the Agriculturalists' Association, the Tourist Board, the Central Emergency Organisation, the Ministry of Health, Fisheries Management Unit, and the Castries City Council, have all given their support. But from 1982 until 1988 our only sponsor for Bush Talk has been the firm of J.Q.Charles Ltd. and to them we are deeply indebted.

The Prime Minister, the Governor, several District Representatives and many other business and professional people donated their time and expertise by writing introductions related to their own particular field and The Voice of St. Lucia helped by keeping printing costs to a minimum and often making no extra charge for additional supplements.

Now the Canadian International Development Agency has made it possible for Bush Talk to be published in book form with each book containing six or more issues dealing with related topics.

Forestry and Lands Department, who first produced Bush Talk as part of their Environmental Education Programme, wish to thank everyone who has helped them to accomplish their goal of providing St. Lucia's school children with material that deals specifically with their own environment.