



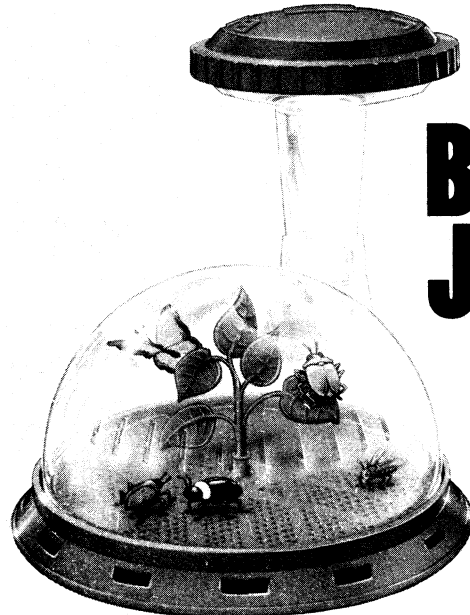
Uncle Milton's

Bug Watchers' **HANDBOOK**



Uncle Milton Industries
Westlake Village, CA 91362

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BUG JUG

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This Handbook belongs to:

Name: _____

Address: _____

School: _____

Grade: _____ Age: _____

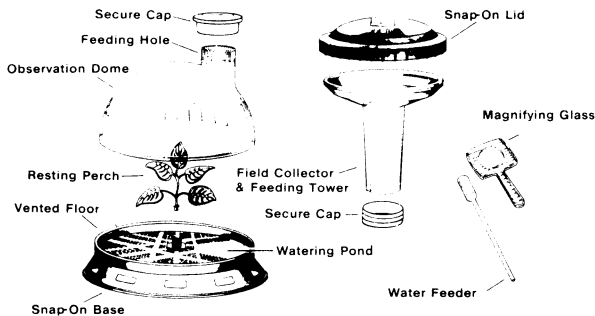
What Are BUGS?

They're everywhere—in your house, your garden, the air, and in the ground. They've been here for hundreds of millions of years. Dinosaurs stepped on roaches, were bitten by spiders and watched butterflies fly past.

But the word "bug" can be used in different ways. Some people use it to mean anything that has a lot of legs or feelers. Some people say "bug" when they mean something even smaller, like a germ. In this book, we are mostly talking about **insects**, a kind of animal that has three body parts, antennae, wings, and six legs. An **entomologist** is a scientist who studies insects.

Insects can do a lot of things humans wish they could do—like make honey and silk, turn invisible, work for hours and hours without taking a break, and fly. Entomologists have identified millions of kinds of bugs, and there are probably far more that have yet to be discovered. Starting on page 11 are pictures of some of the ones we know about.

How to Use Your BUG JUG



Assemble **Bug Jug** as shown here. Bend the leaves of the **Resting Perch** outward so they are horizontal. Insert into hole at center of **Base**. Snap **Observation Dome** securely onto **Base**.

The **Base** and **Dome** stay home while the **Field Collector** and **Lid** go with you on your bug hunt. Later, they fit together and the **Field Collector** becomes a **Feeding Tower**. When you are on your bug hunt, put the **Caps** on the **Field Collector** and **Feeding Hole**.

Bug Catching

Interesting bugs can be found almost anywhere—a field, a forest, a pond, your backyard. Some bugs are easy to see, some a little harder. When approaching a bug, move **very slowly** so you don't frighten it. Remember that you are much bigger (and scarier) to it than it is to you! Using the **Lid**, gently allow the bug to crawl into the **Field Collector**. Sometimes it is helpful to use a twig or a leaf, or try a bit of fruit! or some honey mixed with water as bait. Always treat bugs with respect, for they have a place on Earth just as much as we do.

Gather a few leaves, twigs, grass or flowers from the same place where you found your bugs. When you return, place these inside the **Dome** so your bugs will feel more at home. Carefully remove the **Caps** and slowly insert **Field Collector** into **Feeding Hole**. If your bugs are too large to pass through the **Hole**, place them into the **Dome** from the bottom. Make sure **Dome** is snapped securely in place again.

Feeding and Care

Rotate **Dome** so that **Feeding Tower** is just above **Watering Pond**. Using the **Water Feeder**, drop in a few drops of fresh, clear water. Make sure there is always fresh water there.

Drop in a little piece of fruit, a tiny bit of meat, or a little honey mixed with water. Bugs eat almost anything, but **not too much!** If you put in too much food, it will spoil and will be bad for the bugs.

Fascinating **F A C T S** *About Insects*

- Insects never close their eyes!



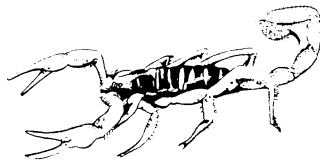
- The digger wasp paralyzes a caterpillar, then lays an egg on top of it and buries them both in a hole. When the baby wasp hatches, it doesn't have to go out looking for a caterpillar to eat!
- Dragonflies can fly as fast as 60 miles per hour! This makes them difficult to study, since in many states an entomologist can only go 55.
- Many insects "mimic" or copy other insects! For instance, a fly might be yellow and black like a hornet. This way its enemies leave it alone.

- Insects protect themselves by smelling bad, looking scary, rolling into a ball, fighting, running, jumping, flying away, hiding or disguising themselves!
- Insects were here before dinosaurs!
- There are more beetles on Earth than any other animal!
- A firefly is really a beetle!
- A spider is **not** an insect!
- Some butterflies can fly hundreds of miles without resting!
- There are more kinds of insects than all other kinds of animals!
- Cicadas live almost their entire 17-year lives underground (longest lifespan of any known insect). Then these orange-winged, red-eyed flying insects emerge all at once for a month of breeding and egg-laying!

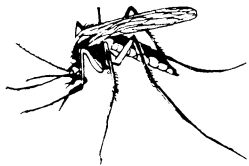
DANGER!
Please Avoid Us!
We Bite Or Sting



Wasp



Scorpion

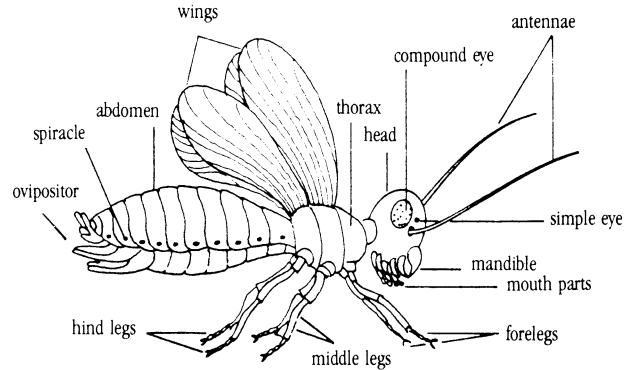


Mosquito



Black Widow Spider

Parts Of
A N I N S E C T



FAMILY TREE

Arthropods

(Animals that have jointed legs and segmented bodies)

INSECTS

(Beetles,
butterflies,
ants, flies,
roaches)

ARACHNIDS

(Spiders,
scorpions,
ticks, mites)

MILLIPEDES

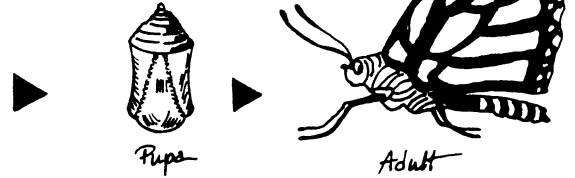
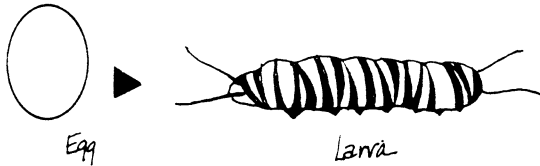
CENTIPEDES

CRUSTACEANS

(Crabs, lobsters,
shrimp, pillbugs,
crayfish)

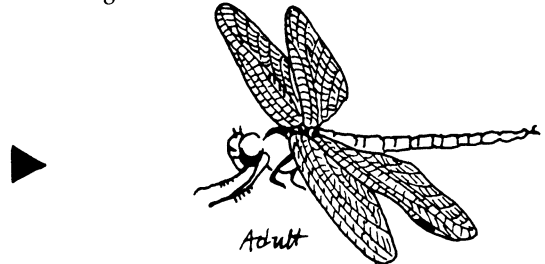
METAMORPHOSIS

How An Insect Grows



Every insect starts life as an egg and then goes through three or four different stages. At each stage, its shape changes completely. Insects in different stages of life might live in places different from where their parents live, and eat different food from what their parents or

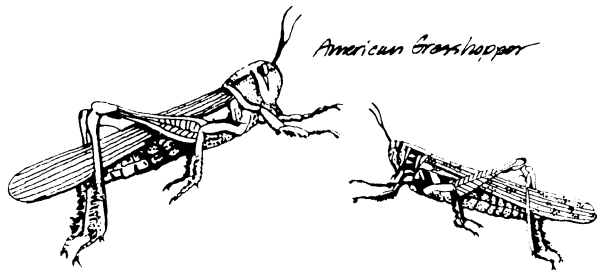
children eat. They might look so different from the way they looked last week that you wouldn't even know they were the same insect. Usually, when we discuss the way a particular insect looks or acts, we are referring to its adult stage.



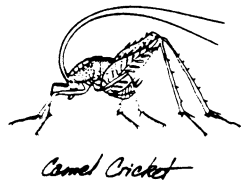
Fascinating BUGS To Discover



GRASSHOPPERS are long, thin and green. They can't run. Instead, they use their huge back legs for jumping. The males "sing" by rubbing their wings and legs together. Their ears are not on their heads, but on their front legs.

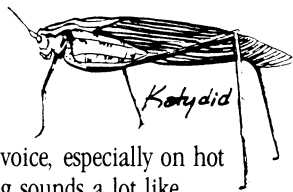


CRICKETS are "musical" too. In Japan, people keep them in cages, like birds, so they can hear them sing. The males often get into fights. In some Oriental countries they've turned cricket-fighting into a regular sport; the crickets get famous and their owners get rich! Crickets barely know how to fly, so they either have to fight or escape their enemies by hiding. The **Field Cricket** sings all day and all night. As the weather gets colder, its singing gets slower. The **Mole Cricket** lives underground. It uses its front legs as digging tools. It goes so far underground that most people never see it. **Camel Crickets** have no wings. They have arched bodies that make them look like camels. Usually they are not found in the open, like the field cricket, but rather under old logs or in caves.





Treehopper



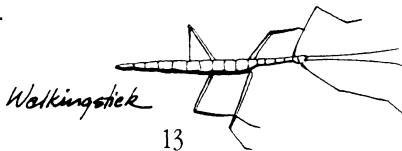
Katydid

The **KATYDID** has a loud voice, especially on hot summer nights. Their song sounds a lot like “Katie-Did-Katie-Didn’t.” They are large (up to 3 inches) with very long antennae, and are often bright green.

TREEHOPPERS are strange-shaped insects that eat the sap of trees. Usually, they are the same color as the trees. Some of them are shaped like thorns! They give out a sweet liquid called honeydew which is collected and eaten by ants.

It’s not hard to see a **WALKINGSTICK**. What’s hard is to *realize* that you’re looking at one. They look just like a part of a tree—either a twig or a leaf! They have no wings, are very slender and can be as long as 12 inches.

The **MANTIS**, is just like a walkingstick except its front legs are longer and stronger so it can grab other insects for food. It looks a lot like it’s praying.



Walkingstick

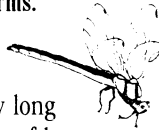


Fireflies

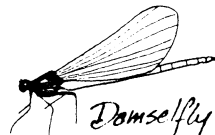


FIREFLIES are a kind of beetle with lights that blink on and off to attract a mate. In some species the females have no wings and their bodies are long, like worms—so they’re called **Glow worms**.

Damselfly



DRAGONFLIES & DAMSELFLIES are very long (up to 5 inches) with two identical pairs of long, narrow wings. You can see through the wings. Dragonflies are often seen near water. When they’re resting, they keep their wings straight out, like airplane wings. Damselflies have weaker wings and don’t fly as fast. When resting, they hold their wings back or straight up. Dragonflies and damselflies don’t use their long legs for walking, but for holding other insects they’re trying to eat. Because they eat other insects, they have sharp biting mandibles instead of the sucking kind like houseflies have.



Damselfly



Ten Spot Dragonfly



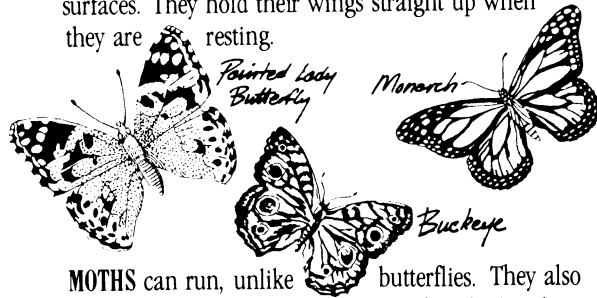
Monarch

CATERPILLARS move slowly on their short legs, so they need to protect themselves by hiding all day. They hide in the ground or tie leaves together and wrap them all around their bodies. One kind of caterpillar moves by arching its back and then stretching out its body, moving about an inch at a time. This is why they are called **inchworms**. Every caterpillar will one day be a moth or a butterfly by metamorphosis (see page 9).



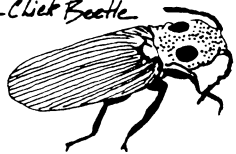
Inchworm

BUTTERFLIES have very large wings so they can move them very slowly and still fly. They alternate flapping and gliding, so they can fly a hundred miles without resting! Their wings are covered with a kind of dust that comes off on your fingers. But the "dust" is actually a lot of tiny scales that cover their bodies and wings. Butterflies don't walk. They use their legs for holding onto surfaces. They hold their wings straight up when they are resting.



MOTHS can run, unlike butterflies. They also can fold back their wings toward their body. The **Sphinx Moth** is large with narrow wings and is one of the fastest insects. Their wings move so fast that they can hover like a helicopter in front of a flower while sipping its nectar. Early in life, when still caterpillars, they raise up the front part of their bodies when they are upset. That's when they look something like a sphinx—a half-human, half-lion creature of mythology.

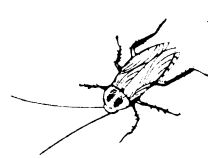
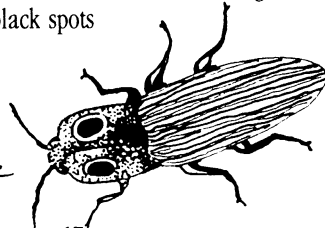
Eye-Click Beetle



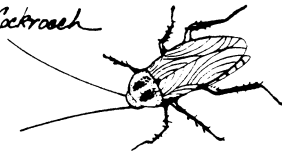
Lady Bug

BETLES live in out-of-the-way places like under rocks or bark. There must be lots of out-of-the-way places in the world, because there are more beetles than any other kind of animal. Throughout history, many people have enjoyed collecting different kinds of beetles. When you look at a beetle walking around, it's easy to forget that it can fly, because it folds up his wings. If you put a **Click Beetle** on its back, it pretends to be dead, then suddenly *flips over* onto its feet, like a gymnast. They are usually brown or black. The **Ladybird Beetle** or **Ladybug** is considered a good friend to humans because it eats some of the insects that destroy our fruits, vegetables and flowers. Ladybugs are small and round, bright red or yellow, with black spots on their backs.

Eye-Click Beetle



American Cockroach



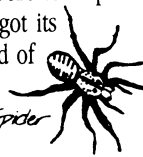
The **COCKROACH** is a close relative of the grasshopper and cricket, but isn't nearly as popular. Why? Because some cockroaches like to live indoors, especially in houses. They can easily slip their flat bodies into cracks in the walls and floors where they sleep during the day, waiting for nighttime when they slip back out for food. Cockroaches run very fast. And they are very old. Cockroaches have been around for more than 350 **million** years. They have survived longer than most other animals we know about.

SPIDERS are found in most of the places you find other bugs. Many people think they are insects, but they are actually different in many ways. They have eight legs instead of six. They have two body sections instead of three. And they don't have wings or antennae. Some weave fancy webs to trap small insects for food. The **Wolf Spider** got its name because it hunts for insects instead of trapping them in a web.

Garden Spider



Wolf Spider



BUG NOTES

Whenever you catch a bug and put it in your Bug Jug, use these pages to keep a record of what it does. Then, after a week or so, take it back to where you found it.

Date: From _____ To _____

Kind of Insect: _____

Where Found: _____

Observations: _____

BUG NOTES

Date: From _____ To _____

Kind of Insect: _____

Where Found: _____

Observations: _____

BUG NOTES

Date: From _____ To _____

Kind of Insect: _____

Where Found: _____

Observations: _____

For Further READING

Your local library has many fascinating books about insects, spiders and just about everything else you'd ever want to know about!



Look for these other great Science Discovery™ products from Uncle Milton!

- **Bugsy BigMouth™ Critter Catcher**
- **Ant Farm®**
- **Giant Ant Farm®**
- **Fossil Hunt™**
- **Rock and Mineral Hunt™**
- **Pocket Museums™**
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