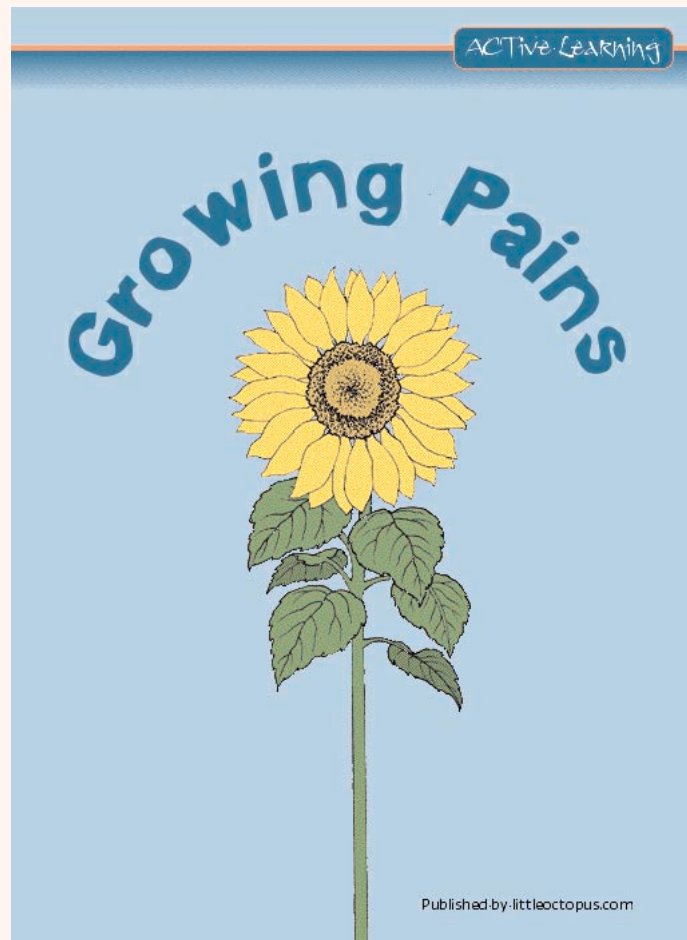


# Growing Pains

A  
Special Edition  
from the  
Active Learning Pack



## Introduction

Welcome to *Growing Pains* a 20-minute play about plant growth. This play covers science at Key Stage 2. *Growing Pains* is published by **LittleOctopus.Com** and is best when performed in the classroom by children. This special edition of the play is included on the CD ROM through the kind support of the BBSRC and the ASE and we hope you enjoy performing it.

The full version of *Growing Pains*, including:

- 10 science activities
- 10 drama and design activities
- a science quiz

is available from LittleOctopus.Com. You will find our address at the end of this introduction.



### *Why combine drama and science?*

Apart from tackling two areas of the curriculum in one lesson there are many ways in which science and drama work well together, two of which are by developing children's creativity and communication skills.

- **Creativity** – drama encourages children's imagination and allows them to explore areas that they would otherwise not be able to experience.
- **Communication** – drama is all about communication, the communication of ideas from the actor to the audience.

### *How to get the best out of Growing Pains*

Although the play has only three characters it can work well when performed by more. Children have great fun designing the costumes and performing the parts of the plants, roots, flowers and nutrients. This will engage the very best of the children's creative and communication skills, and can occupy many a science, drama and art lesson.

### *How did Growing Pains start?*

Chantelle Jay, a researcher working at Horticulture Research International in Kent, initially developed the idea for an interactive science play. She was awarded a Science Communicator Award from the Biotechnology & Biological Sciences Research Council (BBSRC). Chantelle passionately wanted to reach a young audience and tell them about plant growth in an interesting and interactive way. She teamed up with writer John Morgan and actor and director Chris Scanlan to bring the idea to life. *Growing Pains* was first performed in 1997 for schools in Maidstone.

### *More opportunities to teach science through drama*

LittleOctopus.Com publishes *Growing Pains* and another five plays that all use drama to support the teaching of science. Each play comes complete with support activities that cover both science and drama, and each represents a term's work. The other five plays are:

- **Animal Crackers** – this play teaches children about their senses and how they can use them to explore the world around them. They also learn that humans and other animals move and grow.
- **The Pull of Home** – this play teaches children about forces and movement, magnets and springs, friction and the Earth, Sun and Moon.
- **The AOPR Man** – this play teaches children that gases are material and can be distinguished from solids and liquids by their properties. They also learn about the uses of some important gases and where gases are found.
- **Changing State** – this play teaches children about changes of state, which can be reversed. Children will use their understanding to explain a range of familiar phenomena.
- **Keeping Healthy** – this play teaches children that there are many aspects to keeping healthy. Children learn about the heart and how heart beat is affected by exercise and relate this to what they already know about movement and exercise.

The plays are available as both eBooks from the website [www.littleoctopus.com](http://www.littleoctopus.com) or on CD ROM from:

LittleOctopus.Com, 56A Buckland Road, Maidstone, Kent ME16 0SH  
Telephone: 07699 391 991      Email: [mail@littleoctopus.com](mailto:mail@littleoctopus.com)

Thank you for your time and I hope you get many hours of enjoyment from using *Growing Pains*.

#### **Chris Scanlan**

Editor – LittleOctopus.Com.

### **About BBSRC and the Schools' Science Club**

The BBSRC is the leading UK funding agency for research in the biosciences. The BBSRC is committed to making information about advances in the biosciences widely available to schools and the public. We believe that links with schools, colleges and their local communities are an important part of showing how science works, what scientists do, and how scientific research fits into society.

BBSRC produces a range of material for primary schools in support of science education. All materials are developed in collaboration with school teachers. Many of our resources can now be downloaded from our website ([www.bbsrc.ac.uk/schools](http://www.bbsrc.ac.uk/schools)). Other BBSRC resources can be ordered from our free BBSRC Schools Science Club, which now has over 5,000 members. The schools resources are free and may be photocopied for use within educational institutions.

### ***How can I get an original copy of the Growing Pains script and other BBSRC resources from the Schools' Science Club?***

BBSRC has a limited number of the original *Growing Pains* plays and worksheets for Key Stage 2 that can be ordered free of charge. To order a copy and to join the BBSRC Science Club please download and complete the registration and order forms on our website at **[www.bbsrc.ac.uk/schools](http://www.bbsrc.ac.uk/schools)**.

For more information contact Chantelle Jay, the Schools and Community Links Officer, BBSRC, Polaris House, North Star Avenue, Swindon, Wilts SN2 1UH  
Telephone 01793 413302, Fax 01793 413382, email [schools@bbsrc.ac.uk](mailto:schools@bbsrc.ac.uk).

# Section C

## Growing Pains

by John Morgan

*The set consists of a facade shed, a table and a chair. There are various plants in pots scattered around, some of them dead. On the table is a tray of seedlings. There is a bucket of water beside the shed together with a plant spray gun. Carbunckle is a robot. Princess Creosote is an alien. Jo Soap is the gardener. He occupies the chair. His lunch is by him. He is asleep. Carbunckle quietly enters, sees the plants and smiles, sees Joseph asleep and smiles. He collects up some plants and takes them off. He accidentally makes a noise as he exits. Joseph wakes, looks around, notices the audience and addresses it.*

**JOSEPH**

Oh! Hello. What are you doing here? Shouldn't you be at school? You run along and leave me in peace. No. Hang on. Wait a bit. It's not you is it? Pinching my plants? Stay right where you are and ... Don't you dare move. Hands up. Go on. Hands up! Or I'll ... *(looks around for a weapon and produces a spray gun)* ... spray you with this fertiliser. That's better. One of us should go for the police. But there is only me. Joseph Arthur Soapdish to you. Jo Soap for short. But not for long. I'll swat you with my radishes if you call me that. Now where was we ...

*Carbunckle tip-toes out from behind the shed, takes up one of the plants and disappears with it.*

**JOSEPH**

Yes. I know. Tell me your name and why you pinched them so I can write it down. Anybody got a pencil? Where are they? Where have you put them? You did pinch them didn't you? Piece of paper. *(Carbunckle returns and picks up another plant, very carefully selecting it. It is quite dead.)*

**JOSEPH** Well who did then?

**JOSEPH** Where? Behind me? Nonsense!

*Joseph turns and collides with the witless Carbunckle. He grabs the plant. They fight over it. At last he looks carefully at it, as if noticing it for the first time.*

**JOSEPH** You want this?

**CARBUNCKLE** Yes.

**JOSEPH** Take it.

**CARBUNCKLE** Thanks.

*He begins to walk off with it.*

**JOSEPH** Do you want any more?

*Carbunckle turns.*

**CARBUNCKLE** Yes.

**JOSEPH** Please.

**CARBUNCKLE** Please?

**JOSEPH** Yes, please.

**CARBUNCKLE** Yes, please.

**JOSEPH** You're not from round here, are you?

**CARBUNCKLE** No.

**JOSEPH** Where are you from?

**CARBUNCKLE** *(waving his arm haphazardly)* Over there. Somewhere.

**JOSEPH** *(helpfully)* Gillingham?

**CARBUNCKLE** I don't think so.

**JOSEPH** Never mind. Pick your plants.

*Carbunckle carefully picks out some plants and places them in a group. They are all dead.*

- CARBUNCKLE** You don't mind? Only, where I come from these are really important.
- JOSEPH** No. I don't mind.
- CARBUNCKLE** Precious.
- JOSEPH** I don't mind at all.
- CARBUNCKLE** Invaluabubble. Princess Creosote will be pleased.
- JOSEPH** Creosote? I'm glad.
- CARBUNCKLE** We've searched the universe for these.
- JOSEPH** Well, you've saved me a job.
- CARBUNCKLE** Have I?
- JOSEPH** Yes. If you hadn't sorted them out and taken them away, I would have had to.
- CARBUNCKLE** Why?
- JOSEPH** They're all dead.
- CARBUNCKLE** Are they?
- JOSEPH** Yes.
- CARBUNCKLE** Is that important?
- JOSEPH** Of course it is. If they're dead they are useless for anything but compost.
- CARBUNCKLE** Compost?
- JOSEPH** I see. *(He sits on one of the deck chairs.)* Come here. Sit.
- CARBUNCKLE** I'd rather stand. I don't know how to sit.
- Creosote steps out from behind the shed and is not noticed by the others.*
- JOSEPH** You don't know a lot do you?
- CARBUNCKLE** No. It's not my job.

**JOSEPH** Well whose job is it?

**CREOSOTE** Mine.

**CARBUNCKLE** Princess! (*pleased, and showing her the dead plants*)  
Look! I've got some.

**CREOSOTE** Well done, Carbunckle.

**JOSEPH** Carbunckle!?

**CARBUNCKLE** He gave me them.

**CREOSOTE** Thank you. Thank you so much. (*decisively*) Name your reward.

**JOSEPH** Reward!?

**CREOSOTE** Anything. I am so grateful.

**JOSEPH** Well. You can start by telling me what you want them for.

**CREOSOTE** You deliciously silly man. I want them because they are ...

**CARBUNCKLE** Invaluabubble.

**CREOSOTE** Because without them, our planet will die.

**JOSEPH** I appreciate that. But why these?

**CREOSOTE** They are just like the ones we have left, at home.

**JOSEPH** And where do you keep them?

**CARBUNCKLE** In a cupboard.

**CREOSOTE** A locked cupboard.

**CARBUNCKLE** In the cellar.

**JOSEPH** Would that be ... in the dark?

**CREOSOTE** Yes.

**JOSEPH** A dry cellar? And clean?

**CREOSOTE** Oh, yes.

**CARBUNCKLE** And very clean. I do it.

**CREOSOTE** No dirt or dust. No draughts. Airtight.

**CARBUNCKLE** *(sotto voce)* Not much dust anyway.

**CREOSOTE** Carbunckle!

**CARBUNCKLE** It's not easy to sweep up in the dark.

**JOSEPH** You haven't got many, then.

**CARBUNCKLE** No. They all kind of ...

**JOSEPH** Dry up and disappear.

**CREOSOTE** How did you know?

**JOSEPH** Because plants are all living things. They need light, air, nutrition, water. Just like you.

**CARBUNCKLE** Not really like me. I'm an android.

**CREOSOTE** Carbunckle.

**CARBUNCKLE** Just recharge my battery every now and then.

**CREOSOTE** Quiet, Carbunckle.

**CARBUNCKLE** An oil change every six months.

**CREOSOTE** Be quiet, Carbunckle.

**CARBUNCKLE** Full service every six thousand miles.

**JO AND CREO** Be quiet, Carbunckle!

**CREOSOTE** How do you know they are alive?

**JOSEPH** It's the way they behave. They do all sorts of things. You can test them.

**CREOSOTE** How?

**JOSEPH** *(picking up a healthy plant)* Look at this one.



**CREOSOTE** Is that a plant?

**CARBUNCKLE** But it's green.

**JOSEPH** Yes. That's right. It's green.

*He places it on the table.*

**CREOSOTE** Record this, Carbunckle.

**CARBUNCKLE** Yes, ma'am.

*He clicks and whirrs a bit.*

**JOSEPH** Now, look at this one. (*he picks up a second plant and places it beside the first.*)

**CREOSOTE** Second plant. All ...

**CARBUNCKLE** Lanky and yellow.

**JOSEPH** Lanky and yellow. Sick. It was treated the same way as the first one except that it grew in the shade. Not enough light. And this one (*produces a third*).

**CREOSOTE** Third plant. Shrivelled.

**CARBUNCKLE** Shrivelled? (*to the audience*) I know him.

**CREOSOTE** Carbunckle.

**JOSEPH** Not enough water.

**CARBUNCKLE** (*also to the audience*) He's an android from Andromeda.

**JO AND CREO** Be quiet, Carbunckle!

**JOSEPH** This one. (*produces it.*) It didn't have enough soil.

**CREOSOTE** Soil!?

**JOSEPH** Yes, you know. Soil, muck, dust, compost, manure ...

**CARBUNCKLE** Ugh!

**CREOSOTE** What do we need soil for?

**JOSEPH** It's very useful. Plants stand up in it.

**CARBUNCKLE** I don't need soil to stand up.

**JOSEPH** That's because you've got feet.

*Carbunckle looks down.*

**CARBUNCKLE** Yes.

**JOSEPH** Look. *(takes a stick and tries to stand it on end on the table – it falls over)* But if I do this *(he sticks it into a pot full of soil)* it can stand up.

**CREOSOTE** I see.

**JOSEPH** Plants have roots that grow downwards.

**CARBUNCKLE** *(to the audience)* I change them when the tread gets too low.

**JOSEPH** They cling onto the soil with them.

**CARBUNCKLE** *(to the audience)* I prefer new ones, but remoulds are cheaper.

**JOSEPH** They also use them to take in their nutrition and water.

**CARBUNCKLE** I don't.

**JOSEPH** Sorry?

**CARBUNCKLE** I don't use my feet to take in nutrition and water.

**JOSEPH** No! Roots!

**CARBUNCKLE** That's right. No roots. I've got feet instead.

**CREOSOTE** Carbunckle!

**CARBUNCKLE** *(confidentially)* That's my name.

**CREOSOTE** Carbunckle. Get hold of him.

*Carbunckle takes hold of Joseph's hand. Joseph looks embarrassed.*

**CREOSOTE** No! Stop him from moving. Sit on him!

Carbunckle looks Joseph up and down, lets go of his hand, pushes him to the floor and sits on his chest. Creosote sets about collecting healthy plants. Joseph does not bother to struggle. Pause. Joseph attempts to make himself comfortable.

**JOSEPH** (con conversationally) So, where is your space ship?

**CARBUNCKLE** (pointing) Over there.

**JOSEPH** Is it behind that milk tanker?

**CARBUNCKLE** It is the milk tanker. (proudly) I disguised it.

**JOSEPH** Not very big, is it?

**CARBUNCKLE** I suppose not. With all those plants inside, she'll make me sit on top on the way home.

**JOSEPH** (to Creosote) Is it a fair-sized planet then? (she's puzzled) Your planet.

**CARBUNCKLE** (proudly) Two thousand strides bigger than yours. Round the middle.

**CREOSOTE** Why do you ask?

**CARBUNCKLE** (to the audience) She made me measure it once.

**JOSEPH** And how many plants have you at the moment?

**CARBUNCKLE** (to the audience) It was a long walk.

**CREOSOTE** Just the ones in the cellar.

**CARBUNCKLE** (to the audience) Under water half of the way.

**JOSEPH** The dead ones?

**CREOSOTE** Why all these questions?

**JOSEPH** Well. It seems to me that it's going to take you a very long time to steal enough for a planet if all you've got is a milk tanker. You need an awful lot more than that.

**CREOSOTE** We must do it, however long it takes.

**JOSEPH** There is an easier way. Take something smaller.

**CREOSOTE** No. I want the big ones.

**CARBUNCKLE** Only the best for her.

**JOSEPH** But if you treat them properly they all grow ...

**CREO/CARB** Grow!?

**JOSEPH** Look at that tray by the table.

*They do. He gets up and joins them. He demonstrates.*

**JOSEPH** They are all little now, but they will grow into full-sized plants.

**CARBUNCKLE** They'll be a bit crowded.

**JOSEPH** No they won't. I'll put them into bigger pots, like this. Fill the larger pot with compost. So. Make a hole. Carefully separate a plant from the rest. Don't damage the roots. They are very delicate. Place them in the hole and gently press the compost around them. There.

*He pots one of them on and describes the process as he does. You can add to the commentary as appropriate. Carbunckle inspects the pot very carefully and closely.*

**CARBUNCKLE** It's not growing.

**JOSEPH** It is. You just can't see it. It happens very slowly. You can notice the difference after a few days. In weeks it will be very much bigger. As long as you treat it properly. Give it soil ...

**CREOSOTE** For nutrition.

**CARBUNCKLE** To stand up in.

**JOSEPH** Water ...

**CARBUNCKLE** So it can be ...

**JOSEPH** Light ...

**CARBUNCKLE** ... wet.

**JOSEPH** Air ...

**CREOSOTE** Air?

**CARBUNCKLE** There's a problem.

**CREOSOTE** That's why we need the plants. Our air isn't very good.

**CARBUNCKLE** Breathing is rationed.

**CREOSOTE** We need to manufacture air for breathing.

**CARBUNCKLE** *(to the audience)* Doesn't bother me.

**CREOSOTE** We heard that if we had more plants we needn't do that.

**CARBUNCKLE** *(to the audience)* I don't need to breathe.

**JOSEPH** That's right.

**CARBUNCKLE** *(to the audience)* Just a regular oil change.

**JOSEPH** Plants breathe all the time. Like we do. It's called respiration. They breathe in oxygen and breathe out carbon dioxide.

**CARBUNCKLE** That's not much use. We need oxygen.

**JOSEPH** But when it is light, they take in carbon dioxide and let out oxygen.

**CARBUNCKLE** Or rather, they do. You do.

**JOSEPH** If there are lots of plants, they produce lots of it. The Amazon rain forest produces one third of the world's oxygen. It is the oxygen we all breathe in.

**CARBUNCKLE** You all breathe in.

**JOSEPH** We breathe out carbon dioxide and ...

**CREOSOTE** The plants breathe it in. It's like a partnership.

**CARBUNCKLE** Very clever.

**JOSEPH** And that's how we all stay alive.

**CREOSOTE** Carbunckle. Play that back.

*There are electrical/mechanical noises.*

**CARBUNCKLE** Plants start off small and grow bigger. They need soil, light, nutrition and water to grow and live. They breathe in oxygen and breathe out carbon dioxide. In daylight they take in carbon dioxide and make oxygen.

**CREOSOTE** Good. Is there any more?

**JOSEPH** Oh, yes. Lots more. Here. *(goes into the audience)*  
Can I borrow this? Thanks. *(returns with a Key Stage 2 text book)*

*He gives it to Carbunckle, who reads it all in a few seconds.*

**CREOSOTE** Well?

*Carbunckle lays down the book. He recites. Joseph demonstrates with appropriate actions and props.*

**CARBUNCKLE** The roots anchor *(anchor)* the plant and take up nutrients and water from the soil *(soil)* and transport it *(toy truck)* through the stem to other parts of the plant. The nutrients keep the plants healthy, like vitamins *(bottle of vitamins)* keep people healthy.

The stem holds up the plant and supports the flower and leaves *(umbrella)*.

Plants make food *(biscuits)* in their leaves. They need sunlight *(lamp)* to make their food. Inside each leaf there are lots of cells which are like mini-factories *(small factory)*. The cells use the sunlight *(lamp)* to join water *(bucket)* and the gas carbon dioxide *(breathe out)* which the plants take from the air.

The leaves contain a pigment called chlorophyll *(green cap)* which makes the plant look green and helps it to make the food *(biscuits)* when there is light.

Chlorophyll *(cap)* changes water *(bucket)* and carbon dioxide *(breathe out)* into oxygen *(breathe in)* and carbohydrates and sugars which are the plant's food *(biscuits)*.

So during the day plants take in carbon dioxide *(breathe in)* and give out oxygen *(in and out)*.

To use the food *(biscuits)*, plants respire the same as

us (you) all the time.

Plants need a certain amount of heat to grow.  
(Carbunckle produces a hairdryer and applies it to one of the plants.)

*Joseph is exhausted.*

**JOSEPH** Not that much heat!

*Joseph takes the hairdryer from him.*

**CREOSOTE** How much?

**JOSEPH** Well. It varies. Some plants need more than others to do better. It depends.

**CREOSOTE** On what?

**JOSEPH** All sorts of things. The best thing to do is test and see what happens.

**CARBUNCKLE** I know about that.

**CREOSOTE** Do you?

**CARBUNCKLE** It's called a fair test. Scientists do it.

*He goes behind the shed and emerges wearing a white coat and carrying various pots, each with a similar plant.*

**CARBUNCKLE** Here we have plants that have all been given the same conditions. The same amount of water, nutrition, light and soil. But this one at the end ...

*He switches on the hair dryer and aims it at the plants. It shrivels up.*

**CARBUNCKLE** This amount of heat is not good for the plant.

**CREOSOTE** I see.

*Carbunckle gets excited.*

**CARBUNCKLE** You can test for all sorts of things. But one at a time. Take two plants. Treat them exactly the same except you do something to just one of them that is different. Give it a different amount of light, or air, or soil and you can see if it will grow any better.

**CREOSOTE** Wonderful. So we can work out just how to get the right conditions to make the plants just the way we want them.

**CARBUNCKLE** Exactly.

*He rushes into the audience and returns with two children.*

**CARBUNCKLE** This one probably had more water than that one.

**JOSEPH** You can't do it that way. You didn't start with them both the same and in the same conditions. You can't tell why they are different.

**CARBUNCKLE** I see.

*He lines up the plants that are left.*

**CARBUNCKLE** All the same.

*He waters them all and then puts Joseph's cap over one of them.*

**CARBUNCKLE** This one has one thing different. No light.

**JOSEPH** That's it.

*Carbunckle removes the cap.*

**CARBUNCKLE** Just the same.

**JOSEPH** It takes longer than that. Plants do things very slowly.

**CARBUNCKLE** *(pointing to the shrivelled one)* That one didn't.

**JOSEPH** Usually they do, Carbunckle, usually.

**CREOSOTE** What was the substance you referred to – Chlor ...

**JOSEPH** Chlorophyll?

*Joseph demonstrates with the props as Carbunckle once more makes a recital.*

**CARBUNCKLE** The leaves contain a pigment called chlorophyll (*green cap*) which makes the plant look green and helps it to make the food (*biscuits*) when there is light. Chlorophyll (*cap*) changes water (*bucket*) and carbon dioxide (*breathe out*) into oxygen (*breathe in*) and



carbohydrates and sugars which are the plant's food (*biscuits*).

**CREOSOTE** You said.

**CARBUNCKLE** Look.

*Goes to the shed and returns with a large diagram. He points at the relevant drawings.*

**CARBUNCKLE** The chlorophyll in the plant uses the sunlight to join water and carbon dioxide to make oxygen and food. (*bows*) It's called photo ... synthesis.

**CREOSOTE** Photosynthesis.

**CARBUNCKLE** (*to the audience*) Photosyn ... thesis. Photosynthe ... sis. Photosynthesis.

**CREOSOTE** Yes, Carbunckle.

**CARBUNCKLE** (*to the audience*) Photo ...

**JOSEPH** So ...

**CARBUNCKLE** (*to the audience*) ... synthesis.

**JOSEPH** So ...

**CARBUNCKLE** (*to the audience*) Pho ... to ...

**CREOSOTE** (*to Joseph*) Thank you so much. So very much.

**CARBUNCKLE** (*to the audience*) ... synthesis.

**JOSEPH** So ...

**CREOSOTE** We know so much now. Fair tests, chlorophyll, the leaves, the stem, the roots ...

**JOSEPH** No!!!

*Carbunckle recites – faster this time – and like a sergeant-major. Joseph demonstrates with appropriate actions and props.*

**CARBUNCKLE** The roots anchor (*anchor*) the plant and take up nutrients and water from the soil (*soil*) and transport it (*toy truck*) through the stem to other parts of the

plant. The nutrients keep the plants healthy like vitamins (*bottle of vitamins*) keep people healthy.

The stem holds up the plant and supports the flower and leaves (*umbrella*).

Plants make food (*biscuits*) in their leaves. They need sunlight (*lamp*) to make their food. Inside each leaf there are lots of cells which are like mini-factories (*small factory*). The cells use the sunlight (*lamp*) to join water (*bucket*) and the gas carbon dioxide (*breathe out*) which the plants take from the air.

The leaves contain a pigment called chlorophyll (*green cap*) which makes the plant look green and helps it to make the food (*biscuits*) when there is light.

Chlorophyll (*cap*) changes water (*bucket*) and carbon dioxide (*breathe out*) into oxygen (*breathe in*) and carbohydrates and sugars which are the plant's food (*biscuits*).

So during the day plants take in carbon dioxide (*breathe in*) and give out oxygen (*in and out*).

To use the food (*biscuits*), plants respire the same as us (*you*) all the time.

Plants need a certain amount of heat to grow. (*Switches the hair dryer on and off.*)

*Joseph is exhausted.*

**CREOSOTE** We know about fair tests and how to work out what it's best for the plants. We know about chlorophyll and photo ...

**CARBUNCKLE** (*to the audience*) ... synthesis. Photo ...

**CREOSOTE** Yes.

**CARBUNCKLE** (*to the audience*) ... synthesis.

**CREOSOTE** But now we must take our ...

**JOSEPH** Milk tanker.

**CARBUNCKLE** (*to the audience*) Photo ...

- CREOSOTE** ... space ship ...
- CARBUNCKLE** *(to the audience)* ... syn ...
- CREOSOTE** ... and plants ...
- CARBUNCKLE** *(to the audience)* ... thesis.
- CREOSOTE** ... and go home.
- JOSEPH** Well. Now you know so much, I don't think you need to take any plants.
- CREOSOTE** But we must! Sit on him Carbunckle.
- He does.*
- JOSEPH** No. I don't mean you can't have any. I mean that there is a better way. Let me up.
- CARBUNCKLE** Shall I?
- CREOSOTE** No.
- JOSEPH** Fine. You'll never find out, then.
- CREOSOTE** Find out what?
- JOSEPH** How to take thousands, millions of plants back to your world in just one milk tanker.
- CREOSOTE** What?
- JOSEPH** How to take thousands ....
- CREOSOTE** Yes, yes. Let him up, Carbunckle.
- Joseph gets up and goes to the shed. He returns with some packets and a box of seeds.*
- JOSEPH** You just need these.
- CARBUNCKLE** What are they?
- CREOSOTE** They're not plants.
- JOSEPH** Seeds.

**CREOSOTE** Seeds.

**JOSEPH** Yes they are. Most plants start like this. That's how they breed. Plants produce seeds. The seeds fall into the soil and they grow. They develop roots and ...

*Carbunckle speaks very quickly and erratically. He is breaking down and does all the demonstrating himself, scattering the props. Joseph runs after him and attempts to safeguard his belongings.*

**CARBUNCKLE** The roots anchor (*anchor*) the plant and take up nutrients and water from the soil (*soil*) and transport it (*toy truck*) through the stem to other parts of the plant. The nutrients keep the plants healthy like vitamins (*bottle of vitamins*) keep people healthy.

**CREOSOTE** No!

**CARBUNCKLE** The stem holds up the plant and supports the flower and leaves (*umbrella*).

**JOSEPH** Stop him!

**CARBUNCKLE** Plants make food (*biscuits*) in their leaves. They need sunlight (*lamp*) to make their food. Inside each leaf there are lots of cells which are like mini-factories (*small factory*). The cells use the sunlight (*lamp*) to join water (*bucket*) and the gas carbon dioxide (*breathe out*) which the plants take from the air.

**CREOSOTE** Carbunckle!!

**CARBUNCKLE** The leaves contain a pigment called chlorophyll (*green cap*) which makes the plant look green and helps it to make the food (*biscuits*) when there is light. Chlorophyll (*cap*) changes water (*bucket*) and carbon dioxide (*breathe out*) into oxygen (*breathe in*) and carbohydrates and sugars which are the plant's food (*biscuits*).

**JOSEPH** Help!!

**CARBUNCKLE** So during the day plants take in carbon dioxide (*breathe in*) and give out oxygen (*in and out*).

**CREOSOTE** Stop it, Carbunckle!!!

**CARBUNCKLE** To use the food (*biscuits*), plants respire the same as

us (you) all the time.

**JOSEPH** Arghhhh!!!

**CARBUNCKLE** Plants need a certain amount of heat to grow.  
(Carbunckle turns the hairdryer on and Joseph pulls the plug out.)

*Joseph is exhausted.*

**CREOSOTE** Where do we get the ...

**JOSEPH** ... seeds.

**CARBUNCKLE** Seeds.

**JOSEPH** You can have these. This is a packet of grass seed.  
There's thousands in there.

**CREOSOTE** Where can we get some more?

**JOSEPH** Go down to the garden centre.

**CREOSOTE** Garden ...

**CARBUNCKLE** Centre.

**JOSEPH** Take the milk tanker down the road to the roundabout  
and there it is. They have millions of seeds there.

*Carbunckle looks puzzled.*

**JOSEPH** Just a minute.

*Joseph goes to the shed.*

**CREOSOTE** Thank you.

*Joseph returns with a large folding map and gives it to Carbunckle who unfolds it clumsily and examines it.*

**CREOSOTE** Come Carbunckle. We learnt so much.

*Carbunckle walks decisively up-stage, scrutinising the map. Joseph runs after him, stops him and turns the map the right way up. Carbunckle nods his thanks and sets off in the opposite direction, looking always at the map.*

**CARBUNCKLE** (to the audience) I like the part about photo ...

They go to exit.

**JOSEPH** You'll need some money.

**CARBUNCKLE** *(to the audience)* ... synthesis.

**CREOSOTE** You have been so kind.

**CARBUNCKLE** *(to the audience)* Photosyn ...

**JOSEPH** Or a cheque, or credit card or something.

**CARBUNCKLE** *(to the audience)* ... thesis.

**CREOSOTE** We are indebted to you.

*She exits.*

**JOSEPH** You'll be indebted to them by the time you've finished.

*In relief, Joseph relaxes into his seat and closes his eyes. Carbungkle is now in charge and gets the audience to join in. Joseph wakes and frantically demonstrates for one last time.*

**CARBUNCKLE** And the bit about *(very quickly indeed)* the roots anchor *(anchor)* the plant and take up nutrients and water from the soil *(soil)* and transport it *(toy truck)* through the stem to other parts of the plant. The nutrients keep the plants healthy like vitamins *(bottle of vitamins)* keep people healthy.

The stem holds up the plant and supports the flower and leaves *(umbrella)*.

Plants make food *(biscuits)* in their leaves. They need sunlight *(lamp)* to make their food. Inside each leaf there are lots of cells which are like mini-factories *(small factory)*. The cells use the sunlight *(lamp)* to join water *(bucket)* and the gas carbon dioxide *(breathe out)* which the plants take from the air.

The leaves contain a pigment called chlorophyll *(green cap)* which makes the plant look green and helps it to make the food *(biscuits)* when there is light. Chlorophyll *(cap)* changes water *(bucket)* and carbon dioxide *(breathe out)* into oxygen *(breathe in)* and carbohydrates and sugars which are the plant's food *(biscuits)*.

So during the day plants take in carbon dioxide (*breathe in*) and give out oxygen (*in and out*).

To use the food (*biscuits*), plants respire the same as us (*you*) all the time.

Plants need a certain amount of heat to grow. (*Joseph switches the hairdryer on and off.*)

*Joseph is exhausted. Carbunckle exits.*

# Growing Pains

The copyright holders authorise users of this pack to print multiple copies for their own or their classes' immediate use within the purchasing institution. No other rights are granted without permission in writing from the publisher.

**Published by  
LittleOctopus.Com**

56A Buckland Road  
Maidstone  
Kent, ME16 0SH

Tel: 07699 391991  
email: [enquiries@littleoctopus.com](mailto:enquiries@littleoctopus.com)  
web site: [www.littleoctopus.com](http://www.littleoctopus.com)

**Design and typesetting**

GreenGate Publishing Services  
Salford House  
19-21 Quarry Hill Road  
Tonbridge  
Kent TN9 2RN

Tel: 01732 363033  
Fax: 01732 369495  
E-mail: [editorial@ggate.co.uk](mailto:editorial@ggate.co.uk)



There are seven active learning packs available either as CD-ROMs or as downloads from the website. The seven packs are as follows.

**Growing Pains** – This pack teaches children about helping plants grow well, and about plants and animals in their local environments.

**Animal Crackers** – This pack teaches children about their senses and how they can use them to explore the world around them. They also learn that humans and other animals move and grow.

**The Pull of Home** – Through this pack children learn about forces and motion, magnets and springs, friction and the Earth, Sun and moon.

**The AOPR Man** – Through this pack children learn that gases are material and can be distinguished from solids and liquids by their properties. They also learn about the

uses of some important gases and where gases are found.

**Grouping and Using Materials** – Through this pack children learn about changes of state, which can be reversed. They use their understanding to explain a range of familiar phenomena.

**Keeping Healthy** – Through this pack children learn that there are many aspects to keeping healthy. Children learn about the heart and how heart beat is affected by exercise and relate this to what they already know about movement and exercise.

**Creative Writing** – Through this pack children learn how to write plays, use dialogue and construct scenes.

You can order CD ROMs by completing the following order form or by using your organisation's official order form.

Contact Name: \_\_\_\_\_

Organisation/school name: \_\_\_\_\_

Address: \_\_\_\_\_

Town: \_\_\_\_\_ Postcode: \_\_\_\_\_

Telephone: \_\_\_\_\_ Email: \_\_\_\_\_

CD ROM	Quantity	Price	Total
Growing Pains	<input type="text"/>	£29.95	£ _____
Grouping and using materials	<input type="text"/>	£29.95	£ _____
The Pull of Home	<input type="text"/>	£29.95	£ _____
Keeping Healthy	<input type="text"/>	£29.95	£ _____
The AOPR Man	<input type="text"/>	£29.95	£ _____
Animal Crackers	<input type="text"/>	£29.95	£ _____
Buy 5 CD ROMs and get the 6th CD ROM free	<input type="text"/>	£149.75	£ _____

VAT: *Included*  
 Delivery: *Free*  
 Total: £ \_\_\_\_\_

Payment by cheque enclosed. Please make the cheques payable to Animated Learning Limited and enclose them with the order form.

Please invoice my organisation. (UK only).

Payment by credit card. Please fill out your details below.

Credit Card Number: \_\_\_\_\_ Valid from: \_\_\_\_\_

Expiry date: \_\_\_\_\_ Issue number (Switch only): \_\_\_\_\_

Send the completed form, along with payment, to:

**Within the UK** Animated Learning Limited  
 FREEPOST SEA 12325  
 MAIDSTONE  
 ME16 0BR

**From outside the UK** Animated Learning Limited  
 56A Buckland Road  
 MAIDSTONE  
 Kent, ME16 0SH  
 United Kingdom