



Have You Eaten Your Seaweed Today?



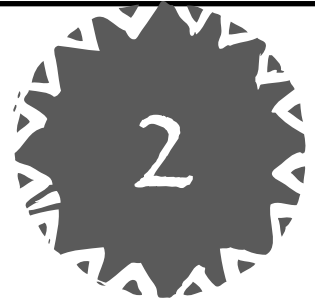
Whether or not you realise it, the answer is probably yes. Did you brush your teeth today? Did you eat ice-cream or mayonnaise, jelly, jam or cream fillings from junk food? Have you enjoyed a thickshake at your favourite fast-food place? If you've done any of these things, you have eaten seaweed today.

All these things and many more are made thicker and creamier by additives extracted from Irish moss and related seaweeds. Do not feel duped. These additives are pure, nutritious, low in harmful fats and help preserve the products.

Make a list of products you think have these seaweed ingredients. Then, when you go to the supermarket, read labels and look for the words algin, alginic acid or carrageenan.

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Oyster-Thief Invasion



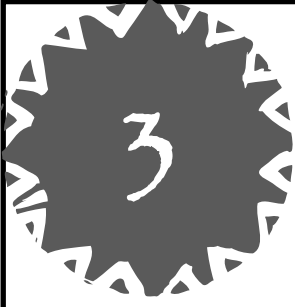
Unnoticed, the microscopic swarms established themselves on the oyster's shell. For a period of days, they grew, spread and turned a bit of chalky white shell to chalky green. The green stain became a cushion of velvety green algae, but was still no threat to the sturdy, firmly-attached mollusc.

But out of the green mass grew cylindrical bodies that branched twice at their tips. Growing and spreading like the beanstalk in the familiar tale of Jack, the seaweed *Codium* began to threaten the oyster.

How could a seaweed threaten an oyster? The larger the seaweed grew, the more the oyster felt the tug of the tides and currents on its own body. In a rough sea, the persistent twisting and tugging broke the oyster's mooring, setting both plant and animal adrift. On the beach, the oyster would die or feed gulls, another victim of the destructive seaweed known as the oyster thief.

There are many species of *Codium*, and in some parts of the world, it is just another type of seaweed. But on the South Australian coast and in many other parts of the world it is a threat to the environment. Explain why organisms that establish themselves in new environments are often more destructive than helpful.

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Blood in the Snow

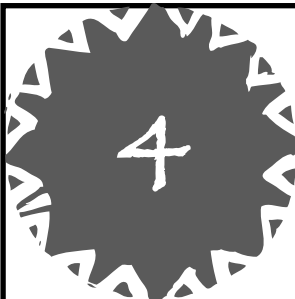
At the top of the cliff, John Ross and his men gasped, not from exertion but from surprise. It was a cold day in 1818. They expected to see a spectacular view of Baffin Bay, near Greenland. But for twelve kilometres beyond them the snow was stained blood red!

Even if everyone on Baffin Island had been massacred, there could not have been that much blood.

What John Ross and his men saw was algae. Algae have simple needs: water, light, gases (chiefly oxygen and carbon dioxide) and minerals.

Think of the environments open to organisms that ask so little. Algae may live in hot springs, the fur of sloths, whale skin, the tissue of giant clams or in mines deep underground. Make a chart of algae's four needs. Fill in the chart by listing the different ways algae meet each need in their various "residences".

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The Very Air We Breathe

You have learned in science before that plants take in CO_2 and give off O_2 and that animals take in O_2 and give off CO_2 . Did you know that the plants that give you the most oxygen are not the familiar ones of farm, field and forest?

By far, most of the oxygen we breathe comes from photosynthesis. This process is the way plants, including tiny marine algae, make their own food. Did you know that these microscopic marine algae produce most of the oxygen we breathe?

If you were wondering how important algae are, consider how important breathing is.

What resources would you use to find out how much oxygen land plants and marine algae add to Earth's atmosphere?

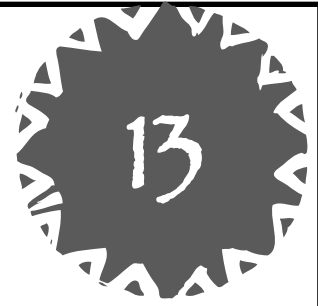
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Rotting Fish, Starving People

Hunger is a problem in many parts of the world. In some places, if fish could be delivered fresh, people would have the protein they need to live.

Bacteria are the primary cause of decay. Decay is delayed by refrigeration. But in some parts of the world, refrigeration is unknown, and sterile canning is too costly. Scientists are getting good results with a low-technology solution. They are blanching fresh-caught fish in 90°C water, then shipping them in salted ice.



Explain how blanching fish and salting the ice keep the fish fresh.

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Least, Most, Oldest, Newest

These words describe bacteria. But how can bacteria be all of these things at once?

At an average size of less than a micron, bacteria are the smallest – least in size – of all known life-forms. Thirty trillion bacteria weigh less than 30 grams!

Bacteria are the most numerous organisms on the planet. In a bucket full of good humus (mature compost), there are more bacteria than all the humans living on Earth.

Fossil bacteria have been found in South African black chert (rock) well over 3.2 billion years old. So bacteria are the oldest.

Scientists use recombinant DNA to make bacteria, the newest organisms we have.

So bacteria are the least, most, oldest and newest of living things.



How are bacteria a study in contradictions? Go beyond the content of this warm-up to justify your answer.

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Mystery of Migration

Why do birds migrate?

It makes sense. They fly south in the winter to find ample food and a milder climate. They fly north in spring to breed when food is abundant there. But

how can we be sure this explains migration?

For more than 100 years, humans have used every tool, from simple observation to electronic satellite tracking, to study bird migration. Yet we cannot even state with certainty why birds migrate, how they navigate or how such behaviour developed.

Some birds migrate by day, others by night. What do you think might be the advantages and disadvantages of each strategy?

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Mussel Bomber

The falling tide exposed more of the shore to some gulls foraging in the seaweed. One pecked at a mussel, twisting and tugging until the mollusc's anchoring fibres broke.

The gull took off with the mussel in its beak and dropped it on a ledge 15 metres below. The impact finished what the gull had started: the shell broke. Then the gull swooped down and gobbled up the rich mussel meat before another bird snatched it.

Do you think this feeding behaviour is a learned or an inherited trait? Defend your answer.

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Miracle Glue



This glue bonds to virtually anything. Underwater, it sets almost immediately. Once it's set, it resists acids, alkali, protein solvents and attack by biological agents. It does not crack in extremes of heat or cold. It contains no toxic compounds.

Dentists and doctors see it as a potential boon to their professions. Industrial engineers dream of applications.

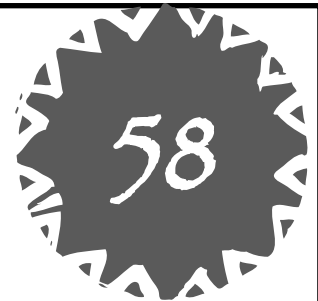
The glue is not available in shops or through special TV offers. It's what bonds barnacles to rocks, shells and ship bottoms.

Charles Darwin spent so much time studying them, his young son, at a friend's house, asked if the study was "where your father does his barnacles".

Why do you think no one has ever been able to synthesise barnacle glue?

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The Stonesfield Monster



Quarrymen at Stonesfield, England, often found fossils as they split limestone to make roofing tiles. Although some of these pretty "imperfections" could be sold as curios, they were more of a nuisance than anything else.

In 1824 a rather large jaw came to the attention of the eccentric Reverend William Buckland.

Buckland presented a paper about the fossilised jaw and what kind of animal it may have belonged to. He named the animal *megalosaurus* - Greek for "very large lizard". Buckland's paper was the first scientific recognition of dinosaurs.

Explain this statement: Although megalosaurus was the first dinosaur discovered, it was not the first dinosaur.

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