

Search and find

TRANSPORT



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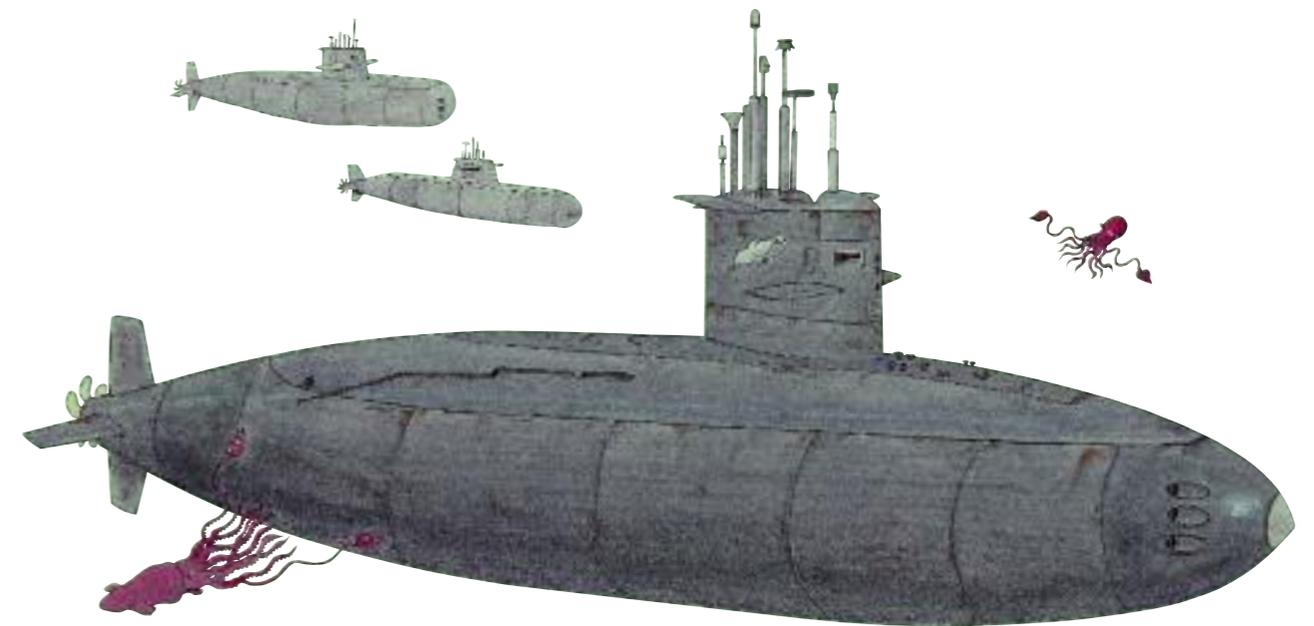
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Illustrated by Peter Kent

 Orpheus



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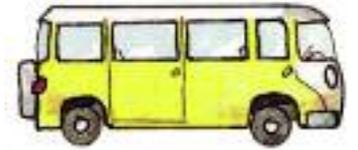


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Introduction

This book introduces you to some amazing transport machines. You may have already visited a railway station or travelled on an airliner—but chances are you have not yet journeyed into space!



The illustrator has taken the walls off some of the buildings and the sides off some of the machines pictured in this book. Now you can take a close look at an airliner's engines, the flight deck of a Space Shuttle, the engine room of a large ferry ... and much more.



See how many of the the pictures at the bottom of the pages you can find in the main illustrations.

Look out for the toy planes!
One is hidden in every scene ...

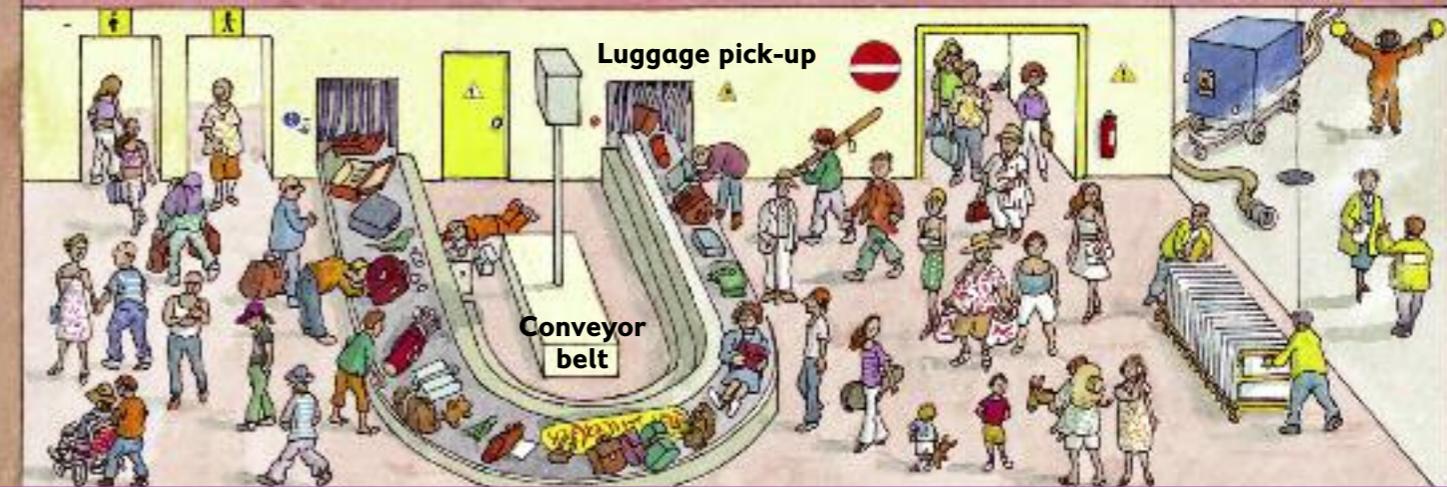
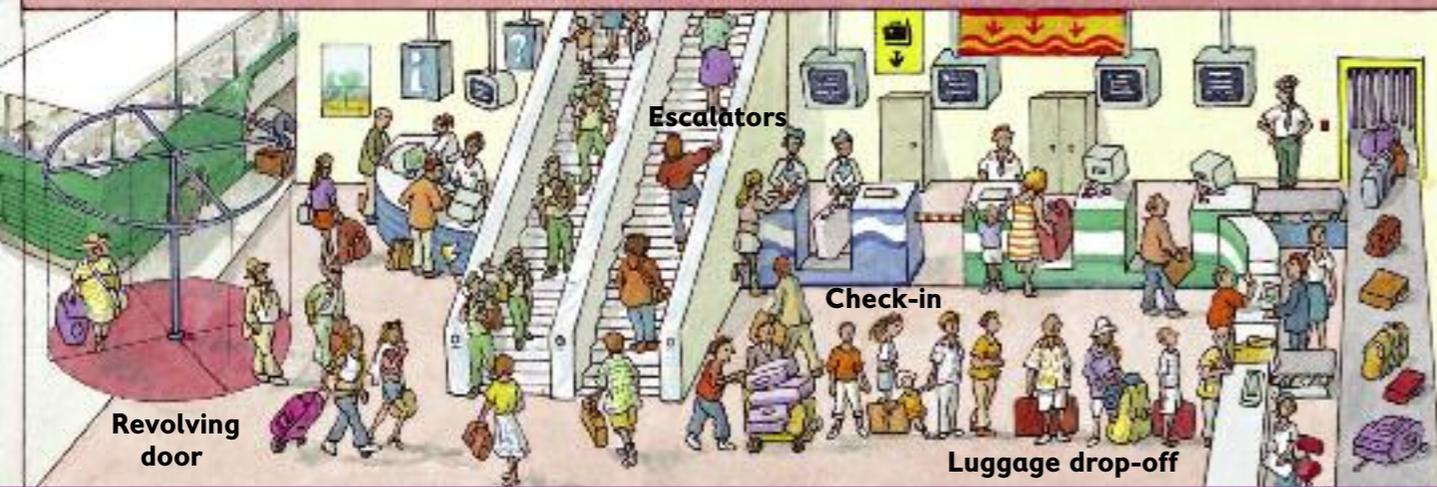
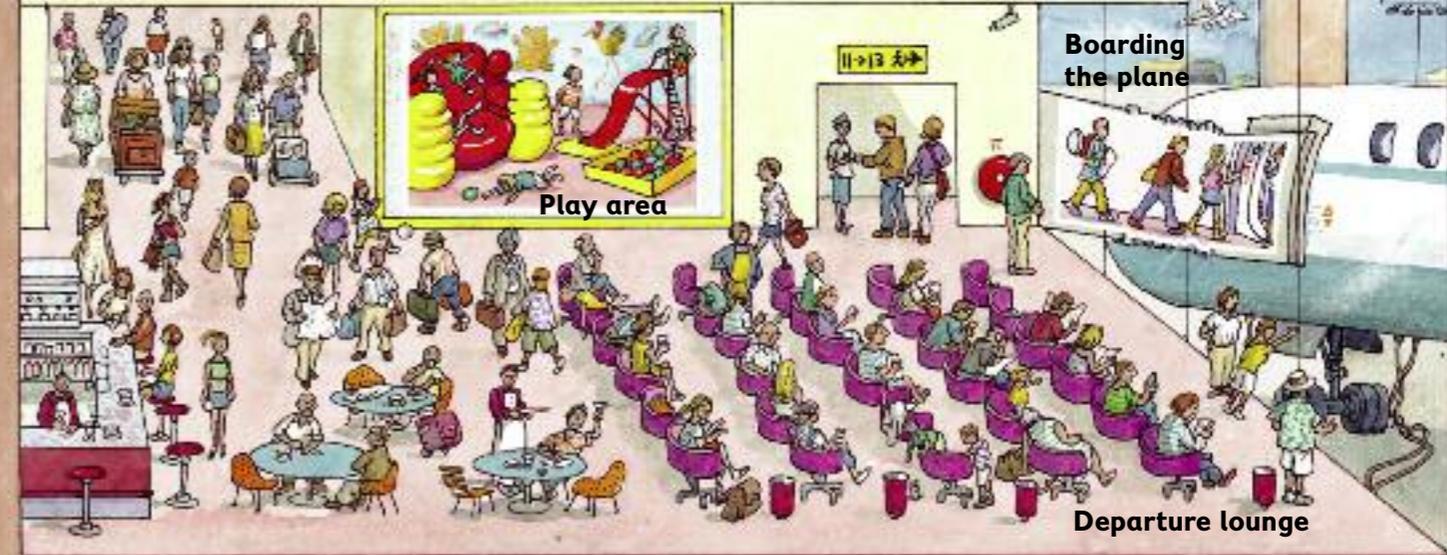


Airport

The airport is very crowded today. Everyone is going on their summer holidays. Before they can board the airliner, the passengers must check in. They give the flight crew their

luggage to store in the aircraft's hold during the flight. Then they show their passports and have their hand luggage checked by X-ray machines.

The passengers wait for their flight in the departure lounge. Screens tell them when their plane is ready to leave.



The check-in assistant prints out a tag to attach to the luggage. This tag has the flight number on it. The luggage is then put on a conveyor belt that will deliver it to the correct plane.



There are some items that you are not allowed to carry on planes, such as sharp instruments and weapons. This X-ray machine can detect these.



Every passenger travelling to another country must show his or her passport to an official. A passport gives proof of their identity (who they are).

While waiting for the plane to depart, children can go to the play area. When the plane is ready to board, an announcement will appear on the TV screens.



Passengers walk through a tunnel to the plane when it is ready to board. The flight attendant checks their tickets and tells them where to sit.

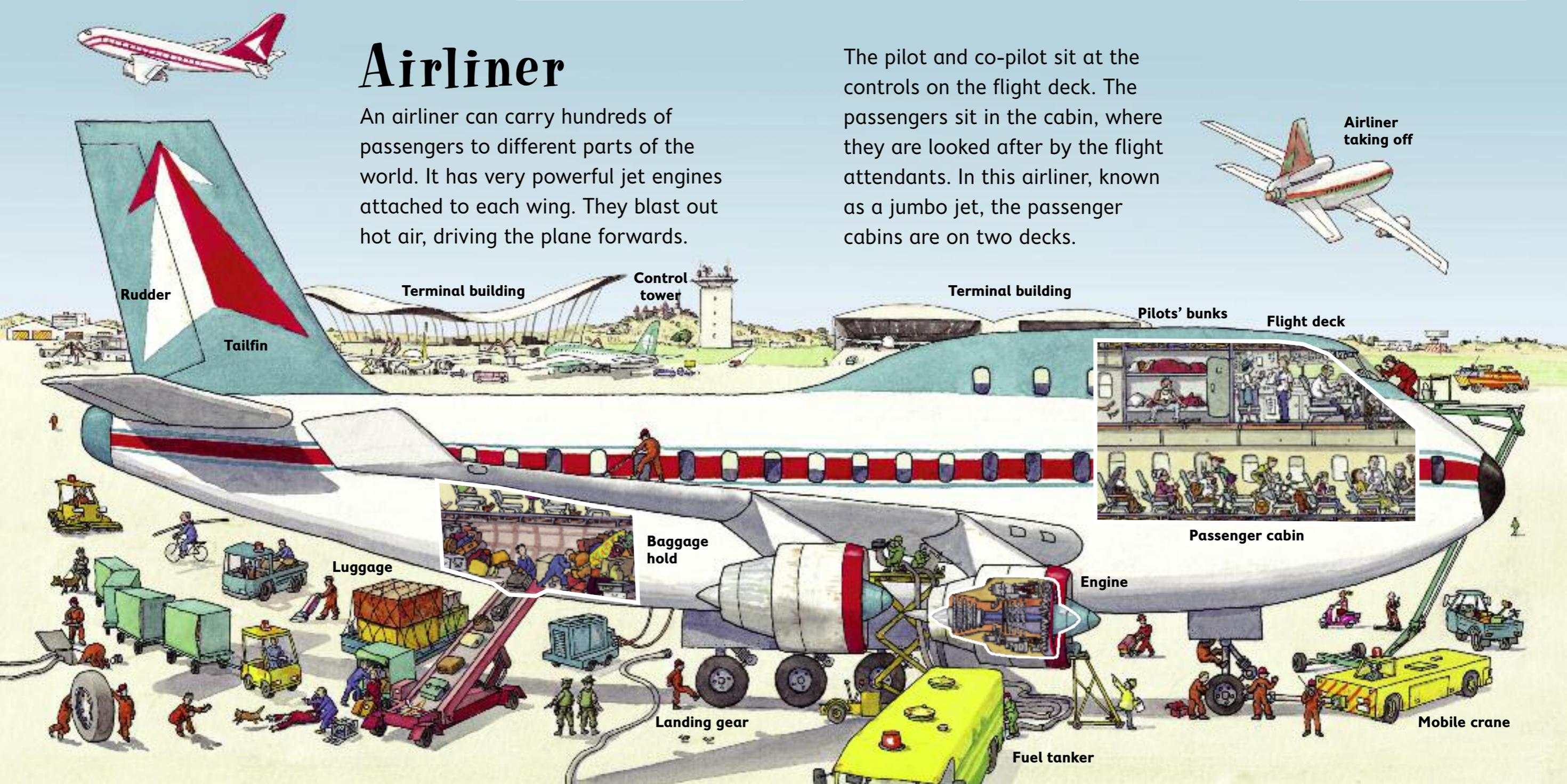
The passengers arrive at their destination and get off the plane. They go to pick up their luggage from a conveyor belt.



Airliner

An airliner can carry hundreds of passengers to different parts of the world. It has very powerful jet engines attached to each wing. They blast out hot air, driving the plane forwards.

The pilot and co-pilot sit at the controls on the flight deck. The passengers sit in the cabin, where they are looked after by the flight attendants. In this airliner, known as a jumbo jet, the passenger cabins are on two decks.



The passengers' luggage is stowed in the airliner's baggage hold before take-off. The ground crew use this special moving ramp. It carries bags and cases up to the hold by conveyor belt.

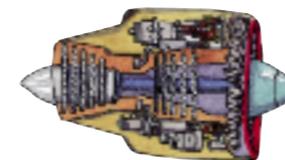


Many different vehicles are used to keep things running smoothly at an airport. These mechanical road sweepers keep the runway clear, so the aircraft can take off and land smoothly.



The wheels on an aircraft are called its landing gear. A jumbo jet has 18 giant wheels. They are all needed to carry its enormous weight.

A jumbo jet is powered by turbofans, a kind of jet engine. Hot exhaust gas escapes at high speed out of the back of the engine. The backward-flowing air propels the plane forwards.



Air traffic controllers work inside a control tower. They direct aircraft to and from the runways. They decide when it is safe to take off or land.

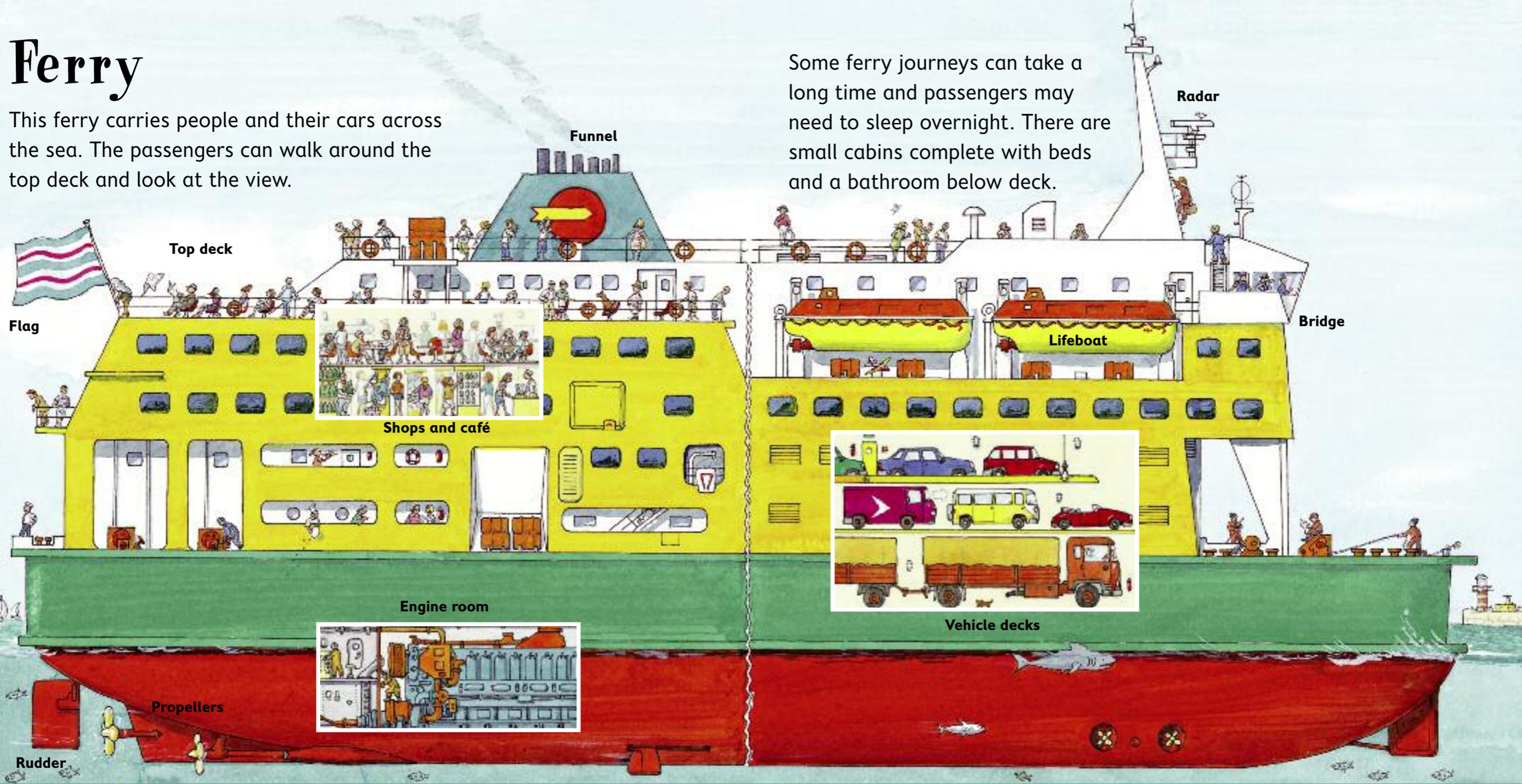
To take off, an airliner races at high speed down the runway. Its wings are shaped so that air moving over the wing moves faster than the air beneath it. This provides a force called lift. The airliner will climb into the air if the lift is greater than its weight.



Ferry

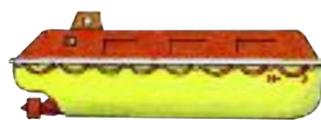
This ferry carries people and their cars across the sea. The passengers can walk around the top deck and look at the view.

Some ferry journeys can take a long time and passengers may need to sleep overnight. There are small cabins complete with beds and a bathroom below deck.



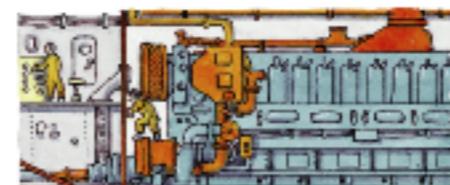
Passengers leave their cars on the lower decks. Lorries park on the lowest decks because they are heaviest. When the ferry arrives, the passengers go to their cars and drive down a ramp off the ship.

Lifeboats are carried on a ferry so that passengers can escape to safety if there is an emergency. They are lowered from the top deck to the sea via pulleys. Lifeboats usually carry several days' supply of food and water.



A large ferry is almost like a small town. Besides restaurants, bars and shops, it might also have a cinema, a gym, a swimming pool and an amusement arcade.

The ferry's engines drive the propellers, which power the ship through the water. To go faster, the engine's throttle is opened up, making the engine work harder and the propeller turn faster.



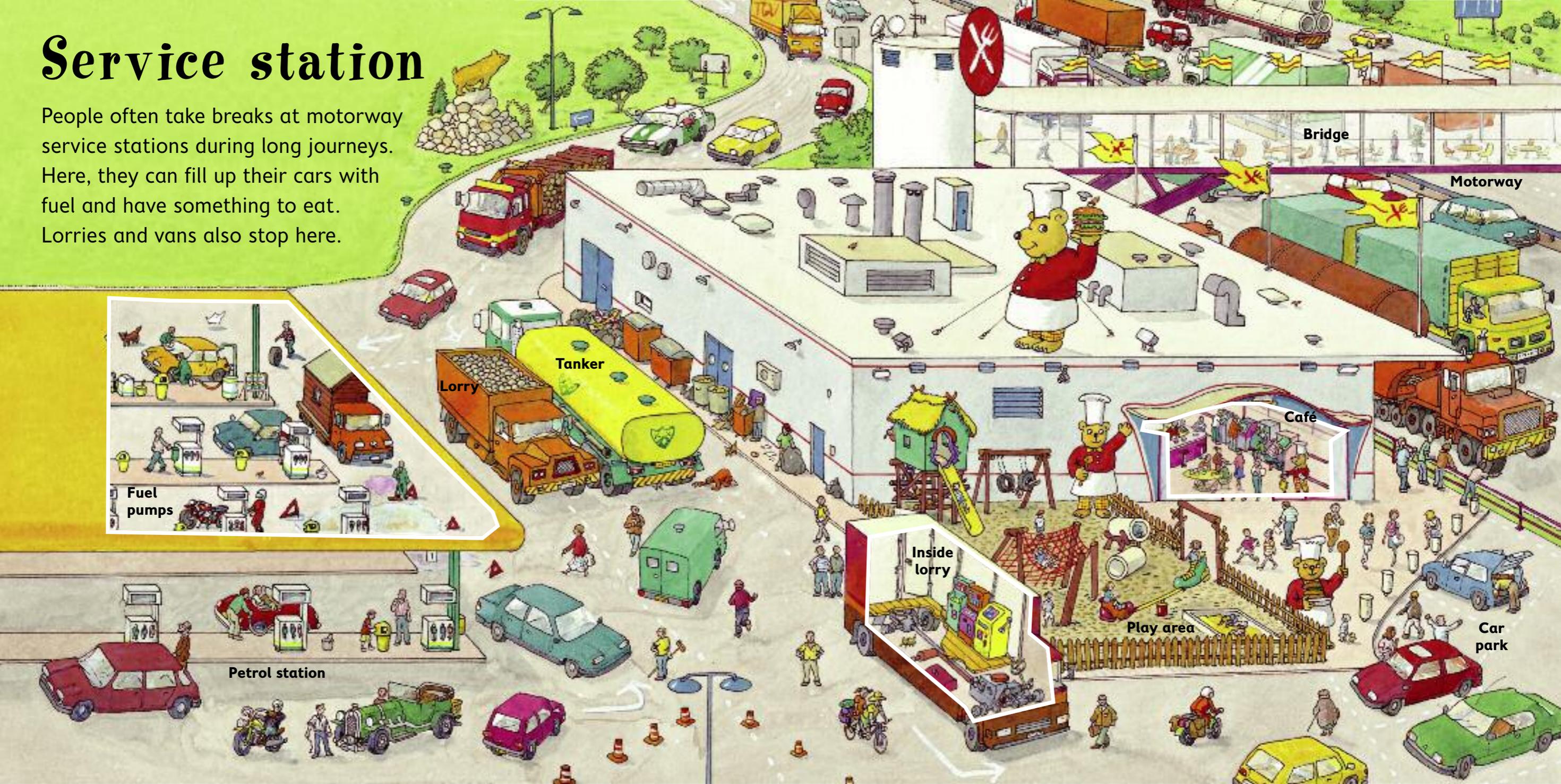
The propellers' blades are large and curved. As they turn, the water around them is sucked in and pushed backwards. This drives the ship forwards.



The bridge of a ferry is its control centre. The ship's captain or senior officer is on the bridge at all times. A radar scans the surroundings to keep the crew aware of passing ships and their exact position at sea.

Service station

People often take breaks at motorway service stations during long journeys. Here, they can fill up their cars with fuel and have something to eat. Lorries and vans also stop here.



Fuel pumps

Lorry

Tanker

Inside lorry

Café

Play area

Car park

Petrol station

Motorways are main roads with several carriageways on either side. There are no tight bends. No vehicles are allowed to park on the road. The only place to stop is at a service station.



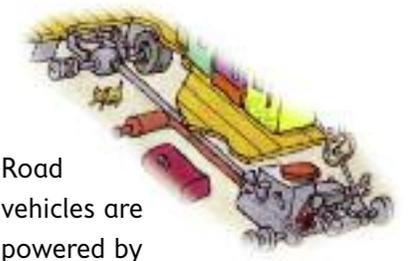
Service stations always have a petrol station where vehicles can fill up with fuel. The customer chooses a pump, unhooks a hose, places the nozzle into the fuel tank and squeezes the trigger.

It is a good idea for drivers on long journeys to stop at a service station for a rest. There is nearly always a café where they can eat and drink.



Children enjoy playing in the playground while their parents take a rest from driving. A long car journey can get boring, so it is nice to stretch your legs!

Lorries have special places to park. Lorry drivers may travel very long distances—sometimes across several countries—to deliver their goods.

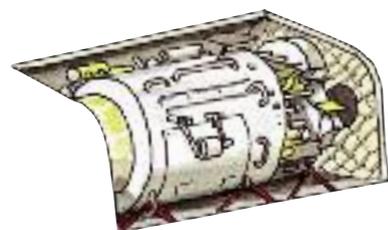
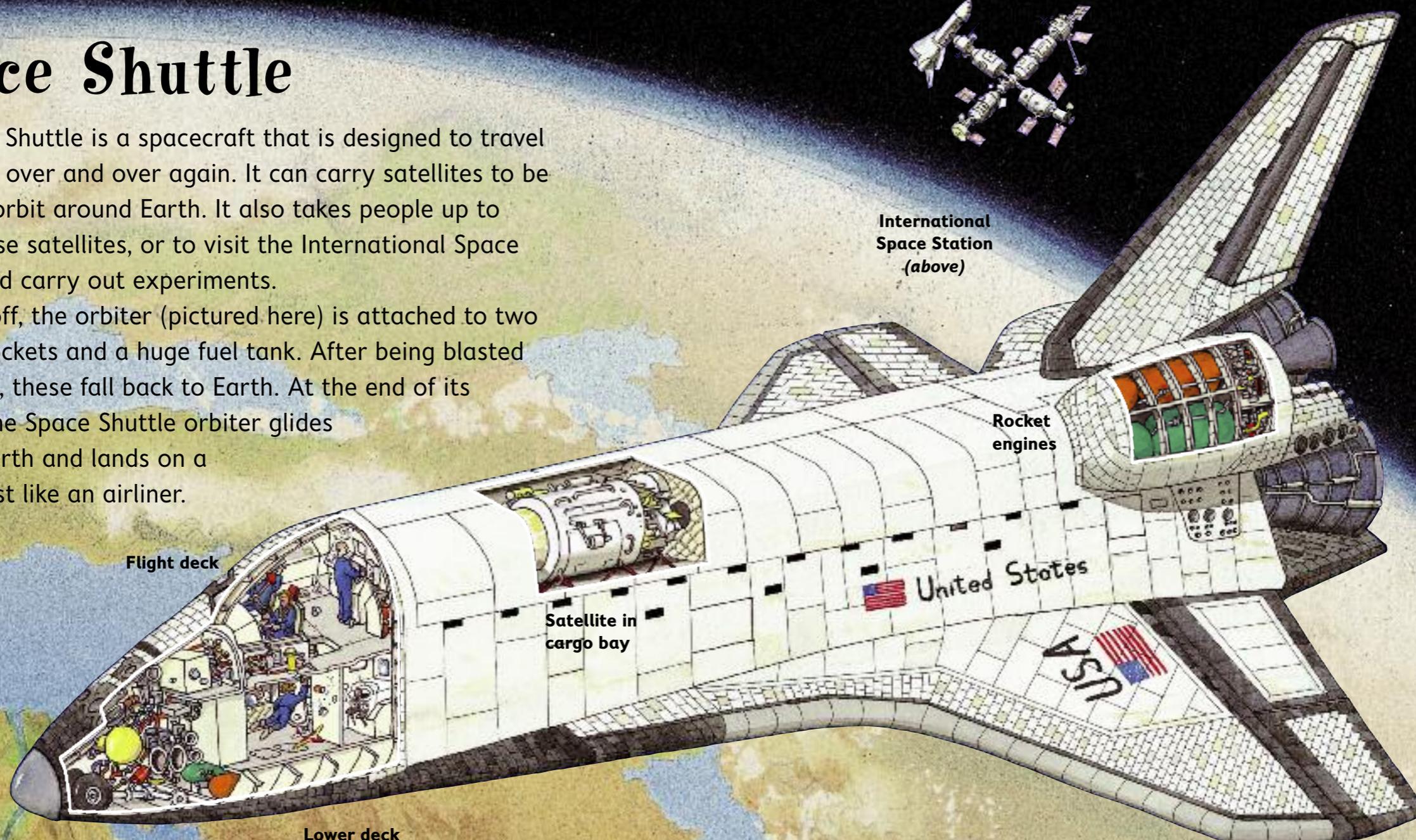


Road vehicles are powered by engines fuelled by petrol or diesel. The engine is connected to a long shaft which turns the wheels. Pressing the accelerator makes the vehicle run faster.

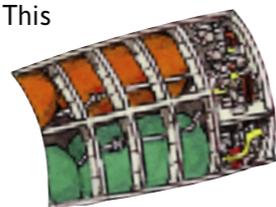
Space Shuttle

The Space Shuttle is a spacecraft that is designed to travel into space over and over again. It can carry satellites to be placed in orbit around Earth. It also takes people up to repair those satellites, or to visit the International Space Station and carry out experiments.

At lift-off, the orbiter (pictured here) is attached to two booster rockets and a huge fuel tank. After being blasted into space, these fall back to Earth. At the end of its mission, the Space Shuttle orbiter glides back to Earth and lands on a runway just like an airliner.



In a rocket engine, two different fuels mix and react together in a combustion chamber. The explosive reaction creates hot gases that blast out of a nozzle at great speed. This propels the shuttle up and away!

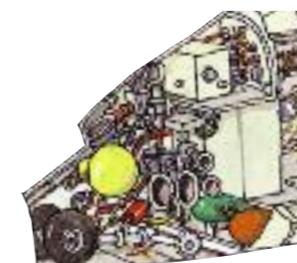


Satellites are released in space to send back information to Earth. They have many uses, including weather forecasting, television signals and Sat Nav.



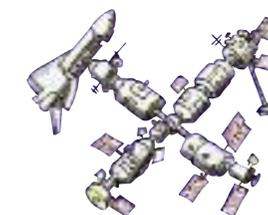
The flight deck is like the cockpit of an aeroplane. It contains the controls for the Shuttle. The astronauts use footholds to keep their feet on the floor.

The lower deck is where the crew's living quarters are located. Here there are beds and a toilet. While in orbit, the astronauts (and everything else) are completely weightless.



Located in the nose of the Space Shuttle are the forward control thrusters. These allow it to make manoeuvres while in space.

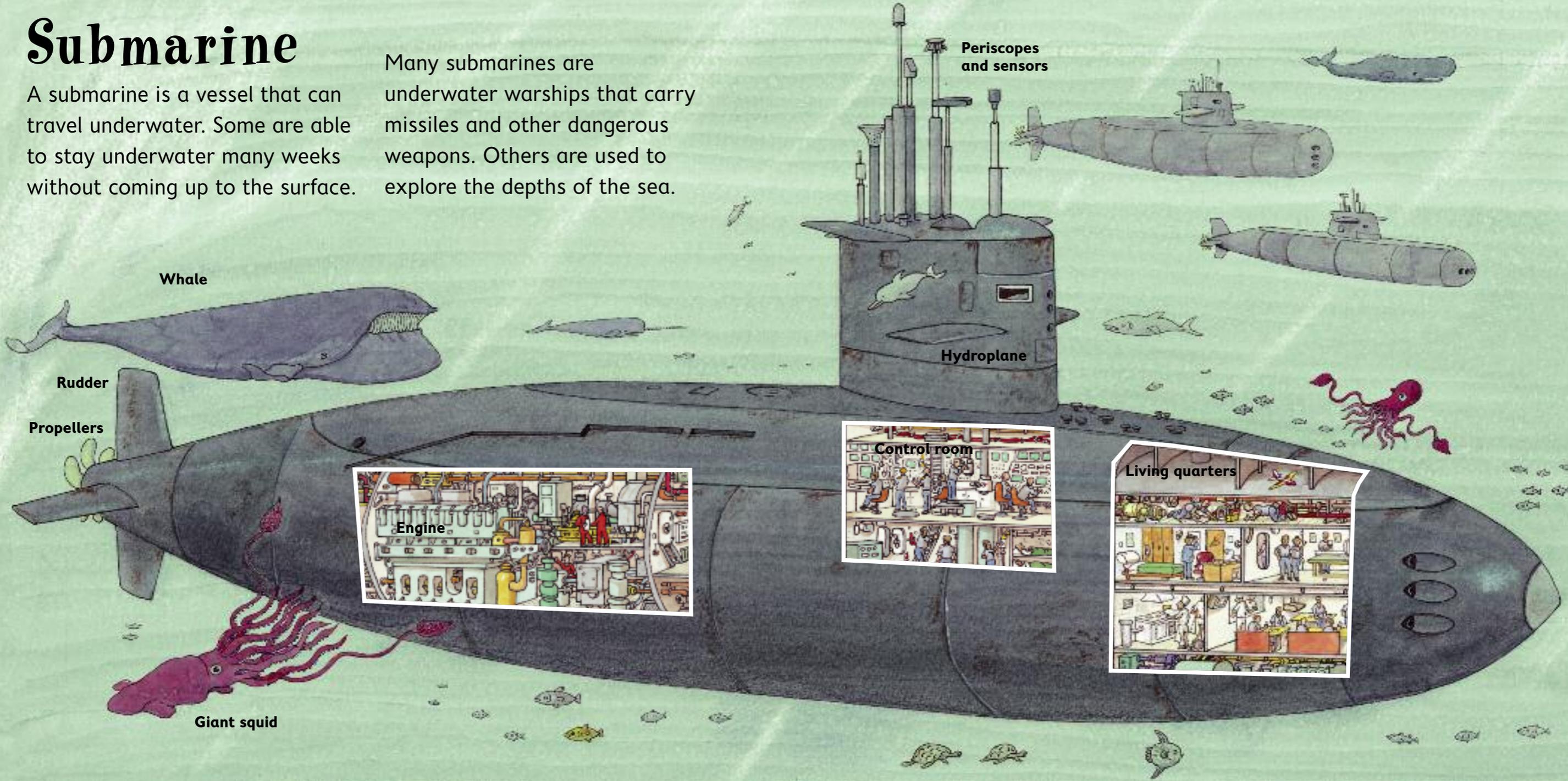
Orbiting high above the Earth is the International Space Station. Permanently manned, it is used for experiments, including finding out how living things survive in space.



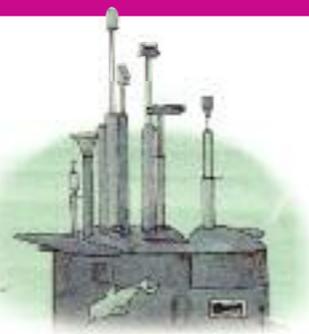
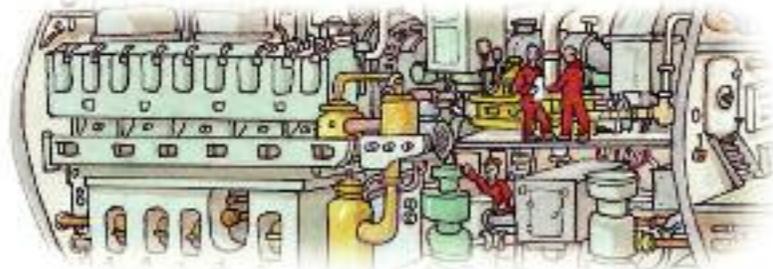
Submarine

A submarine is a vessel that can travel underwater. Some are able to stay underwater many weeks without coming up to the surface.

Many submarines are underwater warships that carry missiles and other dangerous weapons. Others are used to explore the depths of the sea.



The propeller powers the submarine through the water. It works by pushing the water backwards so that the submarine moves forwards. The submarine's engines drive the propeller. Nuclear powered subs need no air to work, so the vessel can remain submerged underwater for long periods.



A periscope is a long tube with a set of mirrors inside. A crew member can look into the viewer at the bottom end of the periscope in the control room and see above the surface.

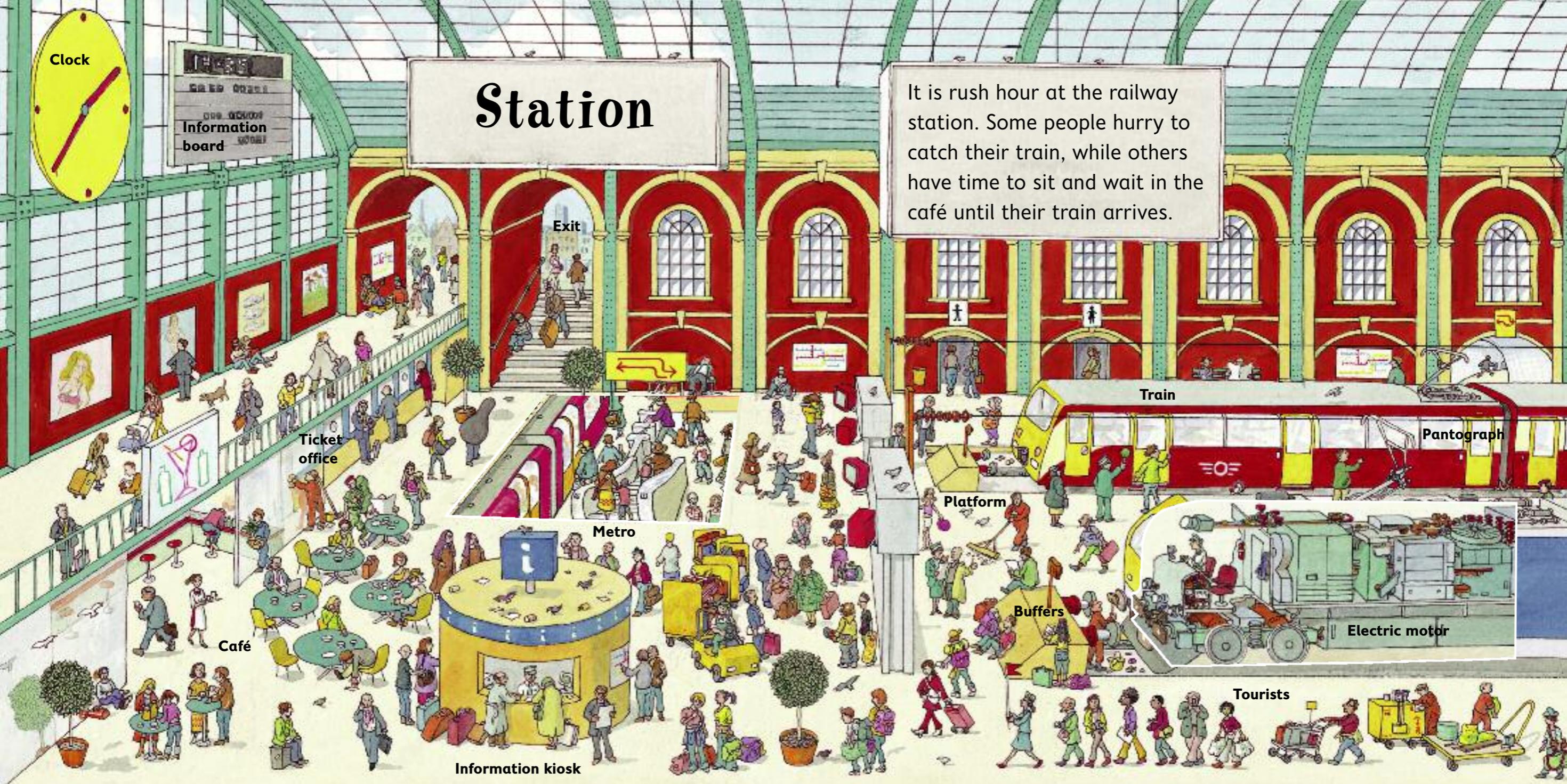
A lot of food needs to be stored on board as the submarine can remain on patrol for months at a time. Officers and crew eat their meals together.



There is very little spare room on a submarine. To save space, crew members "share" beds. While one sleeps the other is up working, and the other way round. So the bed is always in use.

The captain issues commands from the control room. To dive, the sub's tanks fill with sea water, making the vessel heavy. To surface, the water is pumped out again. The rudder turns the vessel to the left or right.





It is rush hour at the railway station. Some people hurry to catch their train, while others have time to sit and wait in the café until their train arrives.



The information board shows when the next trains will be leaving. It also tells passengers if their train has been delayed or cancelled.



Passengers visit the information kiosk to find out the times of trains, how they can reach a certain place, whether they must book seats, and how much the fare will cost.



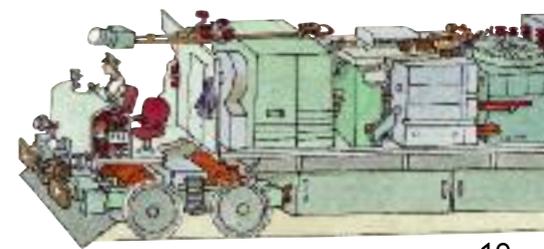
A guide meets the tourists at the station platform. Holding up a flag for them to follow, she leads them to the coach that will take them to their hotel. There are often bus stations close by railway stations to take passengers on the next leg of their journey.

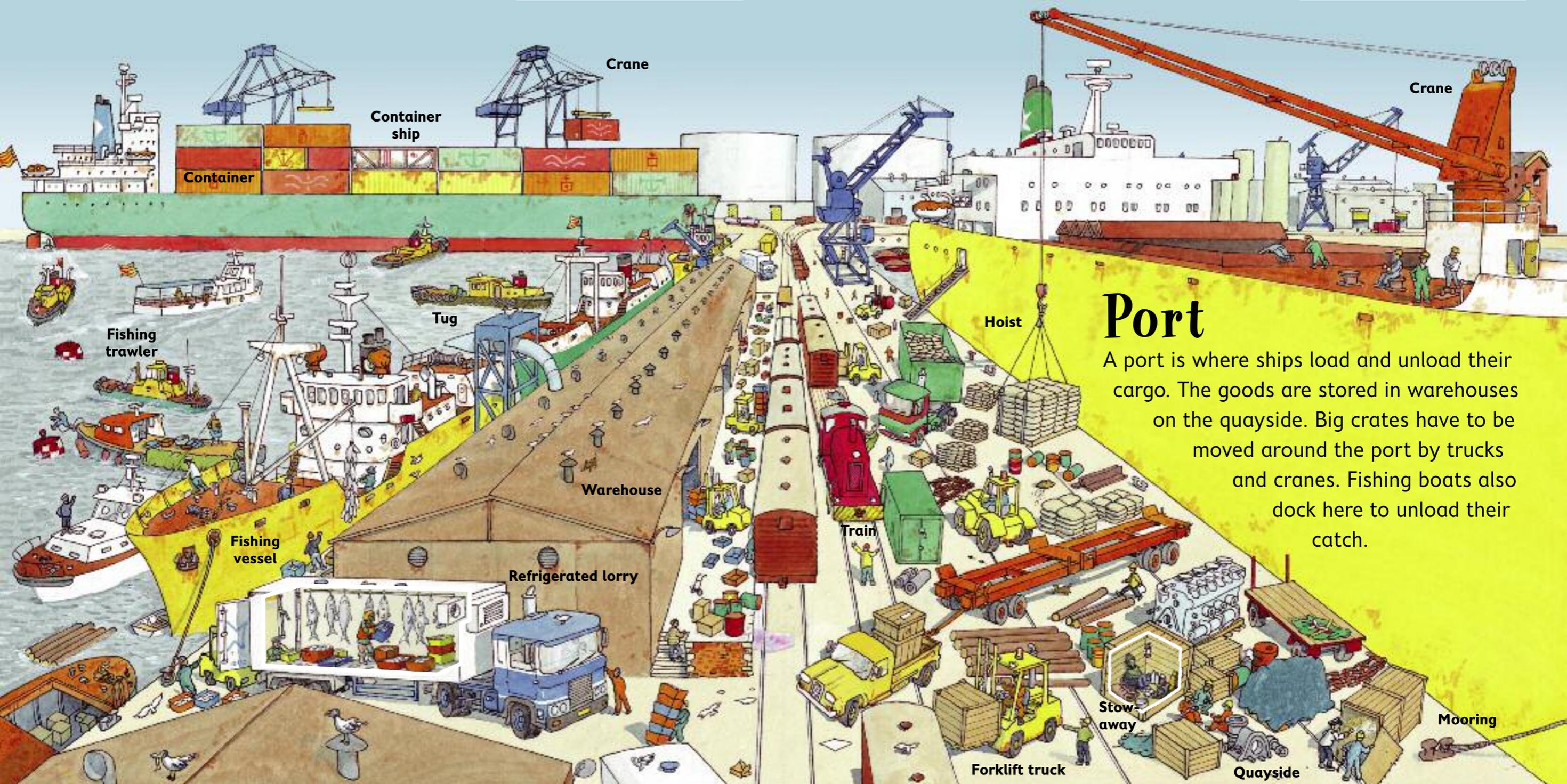
At airports and large railway stations you might see baggage trailers like this one being pulled along by an electric vehicle. The passengers can now board the train more speedily.



The metro station is located under the main station. Metro lines crisscross the city under the ground. Because they avoid the traffic in the streets, metro trains are often the quickest way to get around town.

Trains are powered by electric cables that run above the tracks. A device on the roof of the locomotive called a pantograph collects the electricity, which then powers the motor inside.





Port

A port is where ships load and unload their cargo. The goods are stored in warehouses on the quayside. Big crates have to be moved around the port by trucks and cranes. Fishing boats also dock here to unload their catch.

A tug is a boat specially designed to tow heavy ships, such as oil tankers. It has an extremely powerful engine. This drives a large propeller. The tug is built with a strong steel hull. Its rubber fenders are used for pushing ships.



A crane is used to winch containers from lorries parked on the quayside on to the ship. Some cranes move along on rails, so the hoist can load different parts of the ship.

Gulls are often seen and heard at fishing ports. They fly above the boats and wait for their chance for a free supper!



Forklift trucks can carry very heavy loads in tight spaces. The forks can lift crates off the ground up to where they can easily be rolled on to a van.

Customs officers sometimes check goods arriving at a port. They are looking for illegal cargo, such as drugs. They sometimes find stowaways!



After goods arrive at port they are carried overland by train or by lorry. The goods are then unloaded in a warehouse.



Did you find them?



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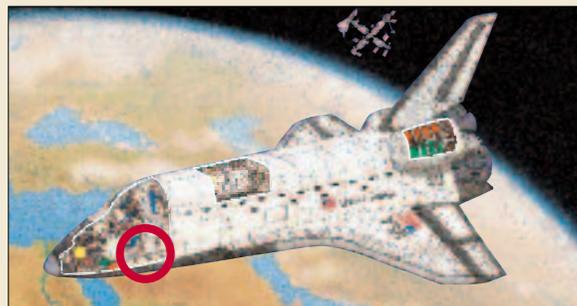
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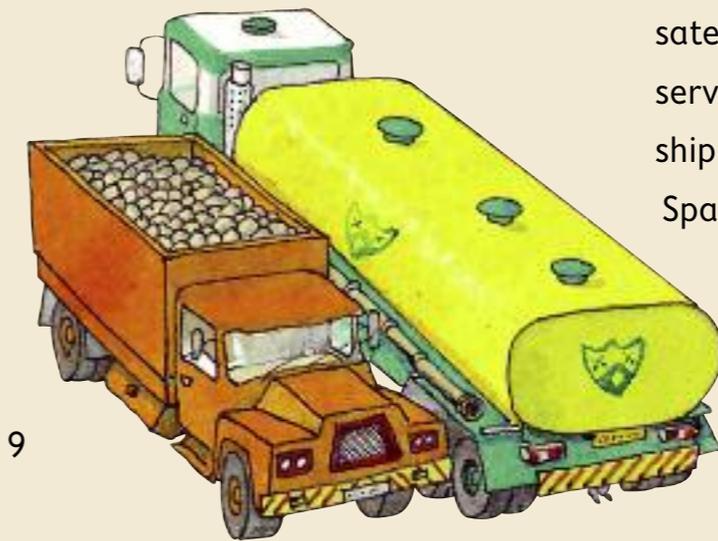
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