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# **Английский язык и экология**

## ***Практикум***

*Рекомендовано*  
*Научно-методическим советом университета для студентов,*  
*обучающихся по специальностям Биология и Экология*

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Практикум содержит аутентичные или переработанные тексты на английском языке, а также упражнения к ним. Тематика текстов в основном связана с науками о Земле и о живых организмах.

Предназначен для студентов, обучающихся по специальностям 020801 Экология и 020201 Биология (дисциплина «Английский язык», блок ГСЭ), очной и заочной форм обучения.

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# 1. INTRODUCTION

Most people find nature quite beautiful. We plant gardens and enjoy the trees and flowers in them. We love going to the woods to gather mushrooms and pick berries. We admire the grand flow of a river and the song of a nightingale. When in nature we begin feeling quiet and refreshed.

But what do we know about Nature's problems? In fact, it has many. Unfortunately, most people seem to be unaware of the fresh water decline, of the rate of forests destruction, of the ongoing species extinction.

The Earth is in real danger now. Among many environmental problems scientists distinguish three major ones: a growing human population, climate change and the mass extinction of plants and animals.

Something is being done to make the environment a better place but environmental degradation of planet Earth continues. For the past 20 years every index of the planet's health worsened. Since 1987, for example, levels of carbon dioxide have risen by a third, the number of species threatened with extinction has increased with a 50 per cent decline in the populations of some freshwater animals and a 30 per cent fall among terrestrial and marine species, while human population has increased by a third.

The figures look frightening, but they are real. That is why we must start thinking hard and then acting. Immediately! Because time is running out.

## **2. THE EARTH**

### ***EARTH AND SPACE***

It is very difficult for us to imagine the enormous size of our planet, Earth. It is even more difficult to imagine that the Earth is just a tiny speck, in one tiny corner, in one tiny part of the Universe.

To most people, the surface of the Earth seems still and solid. But if you live near a volcano, or in an area where earthquakes happen, you would know that our globe is far from unchanging.

The solid part of the Earth that we stand on is called the crust. The whole Earth is more than 12,000 kilometres across. But the crust is only about 30-40 kilometres thick under the land, and 5-10 kilometres thick under the oceans. Compared to the size of the whole planet, the crust is thinner, in proportion, than the skin on an apple.

Underneath the crust is a layer of hot, semi-melted rocks called the mantle. Under the mantle is the Earth's core, which is even hotter, more than 6,000°C. It contains huge amounts of the metals iron and nickel.

The Earth's crust is not all one piece, like the shell on a coconut. It has cracks in it which divide it into huge curved pieces called lithospheric plates. These are moving about slowly. In some places they are drifting apart, leaving huge slits and valleys. In others they are pushing together and crumpling, to cause earthquakes and form mountains.

*(From "Pocket Science" by Chris Oxlade and Steve Parker)*

#### ***Exercises***

1. Answer the questions.
  - 1) What can be said of the size of our planet?
  - 2) What does the surface of the Earth seem to us?
  - 3) What is the solid part of the Earth that we stand on called?
  - 4) How thick is the crust?
  - 5) What is the mantle?
  - 6) What does the Earth's core contain?
  - 7) What does the Earth's crust have in it?

- 8) In what way are lithospheric plates moving?
2. Find synonyms in the following:  
solid, small, crack, below, all, tiny, enormous, slit, quantity, huge, hard, underneath, whole, amount.
3. Give antonyms to:  
thick, small, soft, cold, fast, to pull

## ***WORLD FACTS AND FIGURES***

The Earth is a huge ball of rock and metal, spinning around in space. A line drawn around the middle, or Equator, would measure 40,008 kilometres. The planet's surface covers an area of about 510,000,000 square kilometres, of which 71 per cent is covered by sea.

### ***Earth Extremes***

The lowest exposed part of Earth's surface is in southwest Asia, beside the Dead Sea, at 400 metres below sea level. The world's deepest lake is Baikal, in the Russian Federation. It plunges to 1,637 metres.

About 565 kilometres of caves and underground passages have been explored in the Mammoth National Park, Kentucky, USA – the world's biggest system. At 446 kilometres, the Grand Canyon is the world's longest gorge. It was carved out by the Colorado River in the southwestern United States. The Ring of Fire is the name given to the borders of the Pacific ocean, because so many dangerous volcanoes are sited there.

### ***Highest Mountains***

Everest or Qomolangma, is a spectacular peak in Tibet, on the border between China and Nepal. At 8,840 metres it is higher above sea level than any other mountain.

Mauna Kea, on the Pacific island of Hawaii, measures 10,205 metres from the ocean floor to its peak, which rises to 4,205 metres above sea level.

The highest active volcano in the world rises on the border between Argentina and Chile. It is Ojos del Salado, 6,887 metres high.

The highest range of mountains on any continent is the Himalaya-Karakoram, which includes Everest and 13 other peaks over 8,000 metres.

### ***Longest Rivers***

The River Nile flows from Central Africa to the Mediterranean Sea, through the deserts of Egypt. Its natural course is 6, 670 kilometres long.

The River Amazon could be longer than the Nile – it all depends just where you start and finish measuring, for the river has several mouths. It is normally reckoned to be 6, 448 kilometres long. It drains the world's largest surviving area of rainforest.

There is no doubt about which river is in third place. The Chang Jiang (or Yangtze) flows 6,300 kilometres across central China.

A delta is an area where a river splits into separate waterways before flowing into the ocean. The Ganges-Brahmaputra delta, on the Bay of Bengal, covers about 75,000 square kilometres.

### ***Oceans***

The biggest ocean in the world is the Pacific, with a surface area of 166,241,700 square kilometres. It is bordered by Asia and Australia to the west and the Americas to the east.

The deepest sea is in the Pacific Ocean. The Marianas Trench, a deep crack in the ocean floor, plunges to a depth of 10,911 metres.

### ***Deserts***

The Sahara is the world's biggest desert, covering about 7,700,000 square kilometres. It stretches right across North Africa and takes in burning hot sand dunes, beds of gravel and rocks.

The driest place on Earth is probably Chile's Atacama desert, which has almost no rain at any time.

*(From "Pocket Science" by Chris Oxlade and Steve Parker)*

### ***Exercises***

1. Give the comparative degrees of:
  - 1) long, low, deep, high, big, large, small,
  - 2) good, bad, many/much, little, far,
  - 3) interesting, powerful, spectacular.

2. Give Russian equivalents of the following:

to cover an area, to be covered by sea,

to explore caves, to be explored later,

to measure the ocean floor, to be measured by somebody,

to carve a picture, to be carved out by the Colorado River,

the borders of the Pacific Ocean, to be bordered by.

3. Give English equivalents of the following:

подниматься над уровнем моря, впечатляющая вершина,

самое длинное в мире ущелье, опасные вулканы,

включать другие вершины, течь через пустыни Египта,

устье реки, опускаться на глубину 2 метра,

расщеплять (разделять), песчаные дюны.

## ***MOUNTAINS AND VOLCANOES***

Mountains are so big and grand that they seem to us unchanging and everlasting. But, in fact, mountains are constantly being destroyed and changed. Freezing water, rainfall and streams – all bring some changes in the mountains. All mountains are the result of violent changes in the earth's surface, most of which happened millions of years ago. The formation of mountain chains occurred in different ways. Sometimes rock layers could be squeezed by great pressure into large folds. Some mountains are the result of breaks, or faults, in the earth's crust. Molten lava could lift rock layers coming from below the earth's surface with great pressure.

Just under the earth's hard outer crust, the outer layer of the mantle is made up of molten, runny rock called magma. Magma can force its way up to the surface, creating a volcano. Volcanic mountains are built of lava, ash and cinder. The usual volcano is cone-shaped with a large hole, or crater, at the top.

It may seem that mountains and volcanoes have always been on the surface of the earth. But, in fact, even today a volcano may come into existence. This happened in Mexico, in February, 1943. It took a volcano three months to form a cone about 1,000 feet high. As a result two towns were destroyed and a wide area damaged by the falling ash and cinders.

## *Exercises*

1. Pick out words and expressions from the text to express the same:

constant,	to ruin,	mountain ranges,
to happen,	to consist of,	to do harm to,
a flow,	sharp wind,	to push one's way up,
to burst,	to appear,	at the highest point.

2. Give English equivalents of the following:

разрывы или разломы, вечный, пепел и зола, появляться,  
слои породы, сильнейшие изменения, в форме конуса,  
происходить по-разному.

3. Ask questions to the following sentences:

1) Rainwash and streams carry away rocks and stones down the sides of mountains.

2) Even the highest mountains may change to hills in time.

3) Vesuvius in Italy and Fujiyama in Japan are among the most famous volcanic mountains.

4. Form expressions, translate them and make up as many sentences as you can.

freezing	water	violent	storm
	glance		changes
	point		wind
	politeness		pain
	machine		efforts
			earthquake
to be damaged by		the wind	
		the fire	
		the earthquake	
		the lava	
to be destroyed by		the volcanic eruption	
		the flood	
		the tornado	
		the molten lava	



## **DAYLIGHT AND DARKNESS**

The Earth spins around an imaginary line which goes from the Geographic North Pole, through the centre of the planet to the Geographic South Pole. This line is called the Earth's axis. The Earth turns around it once every 24 hours. Since the Sun shines at the Earth from the side, half the Earth is in daylight and the other half is in darkness.

The Sun seems to move across the sky each day. But really, it is the Earth that is moving. When a place on the Earth is on the side lit by the Sun, it has daytime. As the Earth spins, this place moves around. The Sun seems to sink below the horizon at dusk. The place moves around to the far side, away from the Sun. Then it is dark, and night-time. The Earth continues to spin, the Sun seems to come up over the horizon at dawn, and it is daytime again.

The Sun's light allows us and other animals to see and move about safely. It also provides energy for plants to live and grow. Plants feed animals, and so animals depend on the Sun for food.

The Moon shines because it reflects sunlight. As the Earth spins on its axis, the Moon – like the Sun – seems to move across the sky. And as the Moon goes around or orbits the Earth, its sunlit side changes when seen from Earth. We call these changes the phases of the Moon.

*(From "Pocket Science" by Chris Oxlade and Steve Parker)*

### ***Exercises***

1. Answer the questions.
  - 1) What is the Earth's axis?
  - 2) How long does it take the Earth to turn around its axis?
  - 3) How can you explain the fact that half the Earth is in daylight and the other half is in darkness?
  - 4) Which one is really moving in the sky – the Earth or the Sun?
  - 5) What things about the Sun do seem to us?
  - 6) Why is the Sun so necessary for plants and all the Earth's creatures?
  - 7) Does the Moon shine?
  - 8) What do we call the phases of the Moon?

2. Give one word for the following:

to send light back ,

to turn round and round,

to go or fall deep down,

the rise of the sun,

period of grey light just after darkness,

the common border of the Earth and the sky,

an imaginary line through the centre of the planet,

to go around the Earth.

3. Ask questions to the following sentences:

1) During daytime the sunshine blots out the Moon and twinkling stars.

2) A comet is a 'dirty snowball' of ice and rock.

3) A comet may be seen from the Earth even by day.

## ***THE MOON***

Many planets in our solar system have satellites, but these satellites are small in size compared to their mother planets. The moon, however, is unique: it is the only satellite which is anywhere near the size of its mother planet. Even then its diameter is only about a quarter of the earth's, and its total surface area is less than half that of the Atlantic Ocean. At full moon, the part that we can see is about the size of the North American Continent.

Because the moon is so much smaller than the earth, its gravitational pull is correspondingly smaller: only about one-sixth that of the earth. A space craft which needs a velocity of 25,000 m.p.h. to escape from the earth's gravitational field would need only a velocity of 5,000 m.p.h. to escape from the moon's. An athlete who could high-jump six feet on earth could clear about 18,000 feet on the moon, but he would face no risk on landing because he would descend so much more slowly than on earth.

The moon's gravitational pull is too weak to hold down gas and so, unlike the earth, the moon has no atmosphere. Life as we know it cannot exist. There is no air to breathe. With no atmosphere to protect it from the heat of the sun by day and to retain that heat during the night, the moon suffers great extremes of temperature. It can be so hot

in the daytime that water would boil, and four times colder at night than the lowest temperature ever recorded on earth.

The moon's lack of atmosphere has other effects. There is no sound, of course. There is no erosion due to weathering. All the mountains on the moon are sharp-peaked; the highest, in the Leibnitz range, reach 35,000 feet. There is also no dawn or twilight – day and night come instantly. The moon rotates only once each time it orbits round the earth; its day and night therefore each last two of our weeks.

*(From "English Through Experience" by A. W. Rowe and Peter Emmens)*

### ***Exercises***

1. Answer the questions.

1) What does the first paragraph tell you about the size of the moon?

2) Why is the moon's gravitation much smaller than that of the earth? Give an example illustrating this fact.

3) If identical objects were thrown upward with the same force on the moon and on the earth, which of the objects would take longer to come down?

4) Why does the moon have no atmosphere?

5) Why does the moon suffer great extremes of temperature?

6) What temperatures does the moon have by day and at night?

7) What other effects does the moon have because of lack of atmosphere?

2. Write out from the text as many international words as you can.

3. Give English equivalents of the following:

спутник, космический корабль, сила тяготения, скорость, приземление, спускаться, в отличие от земли, соответственно, 25,000 миль в час, когда-либо зафиксированные на земле, отсутствие атмосферы, из-за выветривания, остроконечные, сумерки, длиться.

### **3. WEATHER AND CLIMATE**

#### ***THE WEATHER***

The weather happens in the lowest layers of the atmosphere. We may have different types of weather because of air swirling about in the atmosphere, carrying various forms of water with it. As the Earth spins and the Sun shines on rocks, forests, cities, lakes and seas, the Sun's warmth heats some parts of the surface and atmosphere more than others. The warmed air rises. This creates an area where the atmospheric pressure is lower than normal, which is called a 'low'. The space made by the rising air is filled by more air flowing from the side. As air cools and sinks, it creates an area where atmospheric pressure is higher than normal, known as a 'high'. Air flowing sideways is known as wind.

#### ***Clouds and Rain***

As warm air moves across the oceans, the Sun's warmth makes water evaporate from the surface. This forms water vapour which makes the air damp or humid. If this warm air rises up into the atmosphere, for example, as it blows over a mountain, it becomes cooler. Some of the water vapour turns into tiny floating water droplets or ice crystals, which we see as clouds. Eventually the liquid or frozen water falls back to Earth, as rain or snow.

#### ***Climate***

Different parts of the world have different types of weather. The general pattern of weather in a place, over many years, is called its climate.

The climate depends on where a region is, on the Earth's surface, and how close it is to large-scale features such as oceans, lakes and mountains. Places near the Equator, around the middle of the Earth, have warm weather all year round. This is called a tropical climate. It may be dry most of the time, creating a desert. Or there may be a rainy season. A short but regular period of heavy rain is known as the monsoon season. Places farther away from the Equator have more marked

seasons, including a warm summer and cool winter. This is a temperate climate.

### ***The Changing Weather***

The atmosphere traps heat from the Sun, keeping the Earth warm. This is the natural greenhouse effect. But certain gases, created when we burn fuels, are increasing the amounts of trapped heat. This is gradually making the atmosphere warmer. This 'global warming' may be changing the Earth's climates for ever.

*(From "Pocket Science" by Chris Oxlade and Steve Parker)*

### ***Exercises***

1. Give English equivalents of the following:

атмосферное давление, нижние слои атмосферы, водяной пар, превращаться в крошечные капельки воды, в конце концов, рано или поздно, общий рисунок погоды, крупномасштабные черты, сильный дождь, умеренный климат, некоторые газы, постепенно.

2. Answer the questions.

1) Where is the weather formed? What helps to form the weather?

2) What makes air rise?

3) What is a 'low'?

4) What happens when air cools and sinks?

5) What makes the air damp and humid?

6) How are clouds formed?

7) What is rain (snow)?

8) What is climate?

9) What does the climate depend on?

10) How can a tropical (a temperate) climate be characterized?

11) What is a monsoon season?

12) What may change the Earth's climate?

## ***ATMOSPHERE***

The atmosphere is a mixture of gases which surround the Earth. Weather is dependent on the interaction of two great systems: the ocean and the atmosphere. The primary function of the atmosphere is to distribute heat from the tropics to the polar regions. With the help

of winds and ocean currents, evaporation and precipitation our climate transfers heat from the equator toward the poles and cold from the poles toward the equator.

The circulation of air currents helps the tropics not to become too hot and the higher latitudes not to become too cold. The general circulation of the atmosphere is also connected with the circulation and temperature of the ocean. The ocean stores heat in the summer and releases it in the winter. The temperature difference from day to night and from summer to winter between the land and the sea is also responsible for the daily onshore and offshore winds and the seasonal monsoons. Clouds are also very important in setting the Earth's temperature.

Our climate operates in a state of a dynamic balance. One day may be cold, the next day hot. One season may be rainy, the next one dry. The global atmosphere works as a complex system. Any sudden change in this system may have a disastrous effect on human civilization.

*(After Jon Erickson)*

### ***Exercises***

Write out from the text as many international words as you can. Translate them into Russian.

2. Give English equivalents of the following:

распределять тепло, испарение, осадки, перемещать тепло, внезапное изменение, более высокие широты, накапливать тепло, высвобождать тепло, отвечать за, береговые и морские ветры, катастрофические последствия.

3. Ask questions to the following sentences:

- 1) The air consists mainly of two gases – oxygen and nitrogen.
- 2) Men and animals cannot live without oxygen.
- 3) In the atmosphere there is a little carbon dioxide.

4. Answer the questions.

- 1) What is the atmosphere?
- 2) What is weather dependent on?
- 3) What is the primary function of the atmosphere?
- 4) What helps climate to transfer heat and cold?
- 5) Why is the circulation of air currents important?

6) In which way is the circulation of the atmosphere connected with the ocean?

7) What is responsible for winds and monsoons?

8) How does our climate operate?

9) Why is it bad for climate to be suddenly changed?

5. Read the following and say what types of scales people use for measuring temperature.

People use two types of scales for measuring temperature: either Centigrade/Celsius or Fahrenheit. Celsius is a scale of temperature in which water freezes at 0° and boils at 100°.

32° Fahrenheit is equal to 0° Celsius.

In Britain both scales are used: Celsius and Fahrenheit. In the USA temperatures are measured in Fahrenheit. In Russia temperatures are measured in Celsius.

6. Read and translate the weather forecast. Say in what country it was made up. What season do you think it is?

## ***NATIONAL FORECAST***

Cooler air will move into the Northeast today in the wake of a cold front. Temperatures will be 10 to 20 degrees lower than they have been in recent days as far south as North Carolina. Brisk breezes from the northwest will accentuate the cool weather, especially in New England.

Warm air returning to the northern Plains will produce showers and thunderstorms from the Dakotas to the central Mississippi Valley. Locally heavy rain will fall across the region and isolated severe thunderstorms will also erupt. Elsewhere, showers and thunderstorms with heavy rain will continue across western and central Texas as the remnants of Tropical Storm Erin spin westward.

Afternoon thunderstorms will develop in the Rockies. Meanwhile, showers will dampen parts of the Northwest Coast.

## ***WEATHER FORECASTING***

Man has always been dependent on weather in growing crops, when travelling, in keeping himself healthy and in many other things.

That is why he has always wanted to know how weather is created and how to predict it.

We still don't have much knowledge about weather systems and how they can move and change.

To predict or forecast the weather is the task of scientists called meteorologists or weathermen. They study weather constantly – hour by hour, day by day.

In fact, it was only about a century ago that the science of meteorology and the practical application of it began. Many years ago meteorologists just looked at the weather trying to find ways of predicting it. Then they began to draw weather maps showing how weather moves. But they needed weather reports from all over the world and as quickly as possible. Sailors were the first to make some progress in the development of organized weather services. The invention of the telegraph system in the first half of the 19<sup>th</sup> century made it possible to transfer information about weather quickly enough so that it could be used for forecasting.

Nowadays the whole world works together to make weather maps. There are now weather forecast stations in many places in the world. Every country has its own national meteorological service. Improved methods of observing the atmosphere have been developed. Earth-orbiting satellites for observing the Earth's atmosphere have appeared.

Today much more is known about the behaviour of the atmosphere but much knowledge still remains to be gained.

### ***Exercises***

1. Read the text and give the main idea of it.
2. Read the text again and retell it.

## **TORNADOES**

Tornadoes are the most violent of all storms. Nobody can predict what they might do. Tornadoes destroy houses, carry away cars and telephone boxes. Tornadoes consist of very strong winds. They can reach speeds of up to 320 kilometers an hour. That is why they are so dangerous.



In Russia during one tornado, people saw money falling from the sky. At least a thousand coins fell from the clouds. The wind had removed the earth from some buried treasure and picked up the coins.

Tornadoes occur throughout the world, but mostly in the United States. The central states of the country have probably more tornadoes than any other place in the world.

Tornadoes occur in the spring. A hot day in the afternoon or in the early evening is the most likely time for this dangerous storm. Large clouds appear in the sky. They become darker and darker. There are sounds of thunder in the distance. Bright flashes of lightning are seen. A cloud then forms a funnel and begins to twist. It moves faster and faster. The faster the wind, the louder the noise. If the funnel touches the ground, it picks up everything it can. The violent winds of tornadoes blow down almost everything on their way.

Fortunately tornadoes can be predicted, and these days people have a much better chance of protecting themselves.

### *Exercises*

1. Answer the questions.
  - 1) What is a tornado?
  - 2) Can we predict what they may do?
  - 3) What does a tornado consist of?
  - 4) What speed can it reach?
  - 5) Where do tornadoes occur?
  - 6) Can you name the place which has more tornadoes than any other place in the world?
  - 7) What is the most likely time for tornadoes?
  - 8) How does a tornado begin?
  - 9) What can be seen in the sky?
  - 10) What does a cloud form then?
  - 11) What happens to the funnel?
  - 12) Why does the noise become louder?
  - 13) What happens when the funnel touches the ground?
  - 14) Can tornadoes be predicted?
2. Find the words with a similar meaning in the text:  
a hurricane, no one, powerful, to damage, to happen, the most probable, to start, to take away, luckily, to defend, opportunity.
3. Continue the list of adjectives to describe a tornado:

terrible, dangerous, impressive, threatening...

4. Retell the text.

## ***ANTARCTICA***

Antarctica is a continent that is right at the southern tip of the planet. If you try to find it on a globe, you will see that it is at the bottom. It takes up one-tenth of the Earth's surface and is covered with a blanket of ice that can be 1500 metres. The South Pole is right in the middle of Antarctica. Antarctica is the coldest continent, as well as the driest, the highest and the windiest. Very few people live there all the year round. Scientists stay there for short periods, living in specially built research stations.

Summer in Antarctica is between October and March. During this time there is non-stop daylight. In winter, April to September, the opposite happens and Antarctica is dropped into six months of constant darkness.

In Antarctica it is colder than you can possibly imagine, even in the summer. The South Pole is the coldest part of Antarctica. The average temperature for January, the middle of the summer, is minus 28 degrees Celsius.

In winter, April to September, the average temperature at the South Pole can be as cold as 89°. When it is that cold, a mug of boiling water thrown in the air would freeze before it hit the ice. Sometimes the scientists have to use fridges to keep the samples warm.

### ***Exercises***

1. Read the text and give the main idea of it.
2. Read the text again and retell it.

## 4. THE SEASONS

The most pleasant season in Europe is the spring, from March till June. In May the weather is fine. The trees put forth little buds, the meadows grow green; the flowers begin to bloom. There are no sharp frosts during the night. The nightingale, swallow, cuckoo, and other birds come back from Africa, build their nests, lay and hatch their eggs and rear their young ones. The new crop is shooting (up). Nature looks full of promise.

By the end of June the weather becomes considerably warmer: summer has come. Sometimes it is very close, and the heat is almost unbearable; then a thunderstorm usually brings relief. Dark clouds gather in the sky; it lightens and thunders, and the rain falls shortly after. A heavy downpour or a hailstorm makes the air cool down very quickly.

When the heat gets too oppressive and the people can no longer bear it, they go bathing and swimming.

In summer cherries, apricots, peaches, strawberries, raspberries, currants, blackberries, and other fruits ripe.

In September autumn begins. The weather is cooler than in summer, and by and by the leaves change colour, and fall off. Apples and pears are now ripe. Most birds go away to warmer countries, only the sparrow and a few others remain.

November is the month of fogs. A London fog – "as thick as pea-soup" – is a thing to be remembered.

Winter is the season of snow-storms and of ice. During the winter there is a lot of rain in England but little snow. The British Isles being surrounded by the Ocean, and washed by the warm Gulf Stream, have a more equable climate than Central Europe has.

### *Exercises*

1. Answer the questions and do the task.
  - 1) What are the signs of each season?
  - 2) What birds besides mentioned in the text do you know?
  - 3) Write out from the text the names of all natural phenomena.

4) In what way do seasons in Russia differ from seasons in England?

2. Complete the following sentences:

1) The trees put forth... .

2) Some people cannot ... it when the heat becomes too oppressive.

3) Sometimes in summer heavy ... or even ... happen.

4) ..., ..., ... and other birds come back from Africa.

5) If the heat is unbearable, a thunderstorm may bring ... .

6) During a thunderstorm it ... and ... and ... .

7) In England during the winter there is a lot of ... but little ... .

3. Make sure that you understand the meaning of the following words:

wet – opposite of dry; e.g. wet weather, wet clothes;

damp, moist – slightly wet; e.g. moist season, moist climate, moist wind, damp weather;

nasty weather – very unpleasant weather;

close – not fresh; e.g. The air is close here. You'd better open the window.

cool – opposite of warm; e.g. When the day is hot it may be cool in the shade;

chill – unpleasant cold; e.g. a chilly wind;

shower – a brief fall of rain; e.g. summer showers;

downpour – a heavy fall of rain, rain in torrents;

drizzle – thin continuous rain, usually in tiny drops;

fog – thick water vapour;

mist – water vapour less thick than fog;

dew – moisture on the grass early in the morning;

hurricane – a very strong wind;

squall – a sudden violent windstorm;

breeze – a light gentle wind.

4. Form adjectives according to the model:

fog – foggy.

rain, snow, mist, chill, dirt, dew, cloud, wind, sun, storm.

5. Change the Present Simple into the Present Continuous in the following:

It rains. It snows. It grows dark. It thunders. It drizzles. It freezes. It pours. It thaws.

6. Give Russian equivalents of the following (consult a dictionary):

the heat is oppressive, steady rain, insular climate,  
a blast of wind, a dazzling lightning, piercing cold,  
to be in full bloom, cutting wind, at dusk, it hails,  
a spell of bad weather, wet with dew, a flash of lightning,  
harvest time, it looks like rain, it is clearing up,  
the temperature rises.

**Task.** Read and translate the dialogue.

## **WEATHER TALK**

GEORGE: Isn't it marvelous to take a walk in Hyde park on such a beautiful day, Leo?

LEO: It is. These parks are really the lungs of London. By the way, I'm a bit tired. There's a nice bench.

GEORGE: You mean the girl on that bench is nice. She is rather good-looking.

LEO: Not rather good-looking, but very beautiful. How do you start a conversation with a girl?

GEORGE: It's better to start with the weather. That's always a safe subject.

LEO: Let's try. (Addressing the girl) Lovely day today, isn't it?

GIRL: It is.

LEO: It seems a glorious day.

GIRL: I think we are in for a fine spell.

GEORGE: I hope it will last. There is hardly a cloud in the sky.

GIRL: We'll have a heat wave, I fear.

LEO: The thermometer is rising, but the barometer is falling. It must be 25 degrees in the shade.

GEORGE: It is very close and sultry today. Not a leaf is stirring.

LEO: There is hardly a breath of air.

GIRL: By the way, I've just read the weather forecast in my newspaper here.

GEORGE: What does it say?

GIRL (reading): "Pressure will remain high to the south- west of the British Isles. There will be occasional rain or drizzle, but bright weather with a few scattered showers will spread to England and Wales".

LEO: I hear a thunderstorm coming.

GIRL: It looks like rain.

GEORGE: What a gust of wind! Thunder and lightning!

GIRL: It's beginning to rain.

LEO: And we haven't got our umbrellas with us.

GEORGE: It never rains but it pours!

GIRL: Fortunately enough, I've got my folding umbrella with me. Let me put it up.

LEO: What a tremendous clap of thunder!

GEORGE: And what a flash of lightning!

LEO: But the English have a saying about the weather: "If you don't like it now, just wait a bit".

GEORGE: Look! It's clearing up. The clouds are lifting.

GIRL: It has stopped raining. Look at this wonderful rainbow!

LEO: Bright sunshine again. Now I know why English weather is something worth talking about.

**Task.** Learn the dialogue by heart and act it out.

**Task.** Translate the following texts into Russian with the help of a dictionary.

*1. Leaves in Autumn*

The fall of leaves that takes place every autumn is no haphazard thing.

Trees are unable to absorb water from the soil during the cold of winter; they must, therefore, conserve as much as they can of the water they contain, and since they give off water by transpiration through their leaves, they have to shed those leaves to survive. (The leaves of evergreen trees are especially adapted to prevent water loss, so they do not fall.)

With the approach of autumn, the leaves of deciduous trees begin to change colour as the chlorophyll inside them breaks down. At the same time, the cells at the base of the leaf gradually separate, until the leaf is only hanging on by a vein. Eventually wind, or even the weight of the leaf itself, snaps this last connection, and the leaf twirls down to

join the thousands that are covering the ground. No wound through which infection might enter the tree has been left behind, for other cells have been forming a layer of cork that, by the time of the leaf-fall, has completely sealed the tree off from infection.

## *2. Snow and Hail*

Air above the driest desert always contains some water- vapour, the invisible gas that is formed when water evaporates. When the limit is reached of the amount of water-vapour that air can hold it is said to be "saturated", and the excess moisture is liable to be precipitated in some form. If the water vapour condenses directly into ice from its gaseous state the crystals which are formed are called snow, and snowflakes are born when these crystals stick together because they have partly thawed and then refrozen. When snow first falls, the white eiderdown with which it covers the earth contains a fairly large proportion of air.

Hail is formed when water-vapour condenses first into droplets of rain which in a storm are then carried on uprushing currents of air to the top of a thunder-cloud, where coatings of frost and snow freeze upon them. Having thus grown heavier the drops fall back to the level from which they started and gather a fresh covering of water which at once partly freezes on them. If the drops are now again carried to the upper regions of cloud on another current of air they take on yet another coating of snow and frost, and the process may be repeated several times before the hailstones grow too heavy to be carried upward again. On being split open a large hailstone can be seen to contain several onion-like layers of tightly packed snow and frozen ice.

*(From "English Through Experience" by Albert Rowe and Peter Emmens)*

## 5. PEOPLE AND PLANET EARTH

### ***PROBLEMS FOR THE ENVIRONMENT***

The Earth is 4,600 million years old. Modern man has lived on the Earth for only 35,000 years but, in that time, we have changed our planet in many ways. Many of the things that we have done are good, but many, many more are not good for the Earth.

***Pollution.*** In big cities, cars and buses have polluted the air. Many people in cities now have very bad health problems. Factories have also polluted the land and the water. As a result, many rivers and lakes are now dead.

***The ozone layer.*** Around the Earth, there is a special type of oxygen called 'ozone'. Ozone is important because it stops ultraviolet radiation from the sun. Many aerosol sprays and factories destroy ozone and they have made a very big hole in the ozone layer. This means that too much ultraviolet radiation now enters Earth. This is very dangerous because it can cause cancer.

***More carbon dioxide.*** Carbon dioxide in the air has increased a lot. (Carbon dioxide comes from burning oil, coal and wood.) This has formed a 'blanket' around the Earth. The heat from the sun cannot escape and so the temperature is rising (the 'greenhouse effect'). This means that the level of the sea is rising and the climate is changing.

***Acid rain.*** Acid rain forms like this: poisonous gases come from the factories (when sulphur in coal and oil burn, they make sulphur dioxide). The gases mix with water vapour in the air (and become sulphuric acid). The water vapour becomes clouds. Poisonous rain falls on plants, animals, rivers, lakes, and towns and destroys them. Acid rain can travel thousands of miles, so pollution in one country can become acid rain for another country. In Sweden, for example, scientists have said that 70% of the sulphur in the air comes from other countries, including Britain.

***Fewer trees.*** All over the world, people have cut down millions and millions of trees. As a result, many types of animals and plants are



now disappearing. Trees are also important because they help to produce oxygen and control the climate.

**Overpopulation.** The population of the world is growing fast. In the last 40 years, it has doubled. By the year 2200, it will be about 10,000 million. Our cities will be much bigger. There will be more factories and more roads. We will need more water and more natural resources. Experts say that we will have serious problems in the future. They say that we must change the way we use energy and natural resources NOW.

**Rubbish.** Every day we throw away millions of tonnes of rubbish. Half of this is paper, that we can use again. A typical family in Europe or America throws away more than 1 tonne of rubbish each year, but we can recycle most of this. If we recycle things, we can save money, energy and natural resources. Recycling the Sunday New York Times newspaper, for example, will save 75,000 trees every week.

### ***Exercises***

1. Give English equivalents of the following:

загрязнять воздух, озоновый слой, ультрафиолетовая радиация, вызывать болезни, сильно увеличиваться, улечувиваться, исчезать, вырубать деревья, большая дыра, мусор, перерабатывать, смешиваться с водой, кислотный дождь, ядовитые газы, водяной пар.

2. Ask questions to the following sentences.

- 1) Transport and factories have polluted the air.
- 2) The quantity of carbon dioxide in the air has increased.
- 3) People have cut down millions of trees.
- 4) Scientists have said that global warming may be dangerous for all living things on our planet.

3. Use the Continuous or the Perfect form of the verb in brackets.

- 1) Human activity (to become) dangerous for the planet.
- 2) Our society (to use) its knowledge of chemistry to kill and destroy.
- 3) Air pollution (to cause) serious health problems in parts of Eastern Europe.
- 4) Acid rain (to destroy) many buildings, some of great historic importance.
- 5) Scientists (to try) to reduce the acidity of lakes artificially.

6) Scientists (to develop) different ways to get rid of the chemicals destroying Earth's ozone layer.

7) The manufacture of new products containing CFCs (chlorofluorocarbons) slowly (to decline) in most countries, but it (not to happen) quickly enough.

4. Discuss these questions in class.

1) How is the environment changing?

2) How is it different from the environment of 50 years ago?

3) What problems are there in the environment today?

4) Are there environmental problems where you live?

5) What are people doing to help the environment?

6) In what way can the growth of population affect the environment?

7) What is one of the ways to reduce the amount of rubbish thrown away regularly?

8) Acid rain – what is it?

## ***DEAD SEA IN DANGER***

The Dead Sea, the saltiest body of water of the earth and a wonderful natural treasure, is becoming smaller and smaller because of decisions by people to use part of its waters. The Dead Sea is located at the lowest point of the earth, almost 400 metres below sea level. It is 50 km long. Just 40 years ago it stretched 80 km in length.

One of the main reasons for the sea shrinking is lack of water. 90% of the waters that flow from the Jordan River which traditionally goes into the Dead Sea is taken for drinking and agriculture in Israel and Jordan. Besides, local industry adds to the Dead Sea's problems. They use the water for getting necessary minerals. It's a real disaster for the sea.

Now hundreds of thousands of tourists come to the Dead Sea every year. Its water is so salty that a man can read a newspaper comfortably while lying on his back on the water. The water contains a lot of sulphur, and the thick black mud that is found at the sea's beach is very useful for people with skin diseases. Tourists treat their bodies with the black mud, but they don't think about the Dead Sea's troubles.

It can be saved – but time is running out.

### *Exercises*

1. Answer the questions.
  - 1) Where is the Dead Sea located?
  - 2) How long is the Dead Sea now?
  - 3) Why is the Dead Sea in danger?
  - 4) What are the two main reasons for taking off part of the Dead Sea's waters?
2. Give Russian equivalents of the following:  
because of decisions, the sea's shrinking, in length,  
the lowest point of the earth, natural treasure,  
while lying on his back, time is running out.
3. Give English equivalents of the following:  
находиться, настоящее бедствие, необходимый,  
ниже уровня моря, содержать, лечить грязью,  
кожные болезни, впадать.
4. Retell the text.

## **6. WILDLIFE AND ITS PROTECTION**

### ***WHY DO WE NEED WILDLIFE?***

As never before animals and plants, all living things on Earth, need our protection. Why? The rate of animals' extinction has become enormous and is increasing with every coming day. Forests are being destroyed and especially tropical rainforests in the Amazon Basin of South America and in Asia. With them their inhabitants are going away for ever, too. But everything in nature is in balanced interaction. And the loss of only one species may result in the loss of many more other species. Along with animals we may lose plants medicinal value of which have not been discovered yet. Climate patterns may change because of deforestation. And we may expect more hurricanes and more droughts happening on our planet in future.

Conservationists are trying to do their best to protect wildlife but without support and understanding by other people their efforts will not be enough.

### ***THE ENVIRONMENT***

All living things like people have their favourite habitats. The study of how organisms live in their habitat, finding food and shelter and mates, and surviving predators and dangers, is called ecology. A habitat is where an animal or plant usually lives. For example, an earthworm's habitat is the soil. A cow's habitat is a grassy field. A crab's habitat is the seashore.

Plants and animals which live in a certain habitat have features to help them survive the conditions there. In the desert, a cactus has very long roots, to help it find water deep in the ground. In the ocean, fish have large tails for fast swimming, to help them catch prey or escape enemies.

Features that help an organism to survive in its habitat are called adaptations. Some organisms live in several habitats. For example, foxes can survive in woods, scrubland, farmland and cities.

An ecosystem is made up of a habitat and all the animals, plants and other organisms which live there. They are linked together by the way they feed.

In woodland, plants 'feed' on the minerals and nutrients in the soil. Caterpillars eat the leaves on plants. Small birds eat the caterpillars. Bigger birds such as hawks eat the small birds. These feeding links build up into a food web.

If a habitat is destroyed, the plants there die with it. The animals might try to escape. But they may well perish too, because they may end up in other types of habitats, where they are less well adapted. Every year hundreds of species of plants and animals die out completely, or become extinct, because their habitats are destroyed – usually by humans.

*(From "Pocket Science" by Chris Oxlade and Steve Parker)*

### **Exercises**

1. Put the words in brackets in the correct order. (All the sentences are questions.) Then answer the questions.

- 1) What / study / does / ecology?
- 2) What / a habitat / is?
- 3) What / plants and animals / which live / do / have in common / in a certain habitat?
- 4) What / meant / by adaptation / is?
- 5) There / any organisms / are / living in several habitats?
- 6) What / made / an ecosystem / is / up of?
- 7) How / linked / together / are / parts of an ecosystem?

2. Complete the sentences, using the text.

- 1) All living things have their ... .
  - 2) The study of how organisms live in their habitat is ... .
  - 3) A habitat is where an animal or plant ... .
  - 4) A crab's habitat is the ... .
  - 5) Plants and animals which live in a certain habitat have features to ....
  - 6) In the desert, a cactus has very long roots, to help it find ... .
  - 7) Features that help an organism to survive in its habitat are ... .
  - 8) An ecosystem is made up of a habitat, all the animals ... .
3. Some interesting and amazing facts about various habitats can help you to answer the questions.

All animals, plants and other living things need water to survive. In drought conditions, even predators and prey gather at waterholes.

In the far north and south, summers are warm but short, and winters are long and icy. Conifer trees are adapted to these conditions. The needle-like leaves can withstand frost and stay on the trees all year.

In temperate lands, there are warm summers and cool winters. Trees sprout new leaves in spring, and many kinds of animals feed on them and produce young. In autumn (fall), trees lose their leaves and many animals hide away and sleep.

Tropical forests grow only in the warmest, dampest parts of the world. They teem with plant and animal life, such as giant trees, vines, creepers, monkeys and parrots. Because it is warm all year in the tropics, life thrives continually.

- 1) What makes predators and prey be friendly for a time?
- 2) How are conifer trees adapted to long and frosty weather?
- 3) Why do many animals hide away and sleep?
- 4) What kind of habitat is there in our region?
- 5) Why should we feed birds in winter?
- 6) What makes plant and animal life thrive all the year round?

**Task.** Read the article about the ways birds are protected in Great Britain.

Today our beautiful wild birds of the countryside face more threats to their habitats than ever before – even some of the birds that visit our gardens.

Everyone loves the song of a thrush. But over the last 25 years their numbers on farmland have dropped by 73%. The RSPB is conducting scientific research to find out why.

And many other birds we often take for granted in the gardens and the countryside – like the skylark and tree sparrow – are showing serious decline.

Our seabirds are at risk from oil spills dumped by vessels at sea. The RSPB is pressing for better port facilities for the safe disposal of these oily wastes, and higher penalties for offenders. In protecting their world, we are protecting our own future, too.

The RSPB maintains over 100 nature reserves – places of great beauty, vital to threatened wildlife – that you can visit FREE as a

member. You also get a superb magazine – BIRDS – 96 pages of stunning colour photography and fascinating articles – 4 times a year. You get your own personal RSPB membership card, a handbook crammed with information. And above all, you know you're helping to protect our beautiful natural heritage for generations to come.

### *Exercises*

1. Try to guess what letters RSPB stand for.
2. Read the text again and answer the questions.
  - 1) Why do birds in Britain need help?
  - 2) What is the aim of the environmental organization?
  - 3) What are the benefits of membership of the RSPB?
3. A topic for discussion.

You are an ecologist. Imagine you are asked to speak about the situation with birds in our country and in Britain. What could you say on the matter?

You can use words and phrases given below:

- ... protection of birds,
- ... to conduct scientific research,
- ... are at risk,
- ... are killed by waste oil,
- ... for better port facilities.

## ***TOP KENYAN NATURE RESERVE UNDER THREAT***

Huge sugar plantation would devastate Tana Delta, home to thousands of birds species.

As the deep orange sun sets above Kenya's largest wetlands hippos wallow in the shallows, crocodiles slide off the banks into the brown river. It is one of Kenya's most important natural reserves and very soon it could all be gone.

Plans have been drawn up to turn part of the delta into Kenya's largest sugar plantation – an 80,000 acre area that could produce 1000,000 tons of sugar a year and bring 20,000 jobs to a region where most people do not have jobs. Conservationists are alarmed. They warn that the plantation will destroy the wetlands and with it the habitats of dozens of species of bird.

More than 15,000 birds from 69 species were counted on a single day earlier this year in an area comprising just 15 percent of the wetlands. The coastline is home to endangered marine turtles, while two endangered primates can be found in the forests that line the wetlands.

The Tana Delta stretches for 50 miles inland from the northern coast of Kenya. Thousands of cattle graze along the banks, and flocks of waterfowl soar from the river towards the pink clouds above.

But amid the beauty there is desperate poverty. Around three quarters of the delta's residents live on less than \$1 a day. Jobs are scarce, clean water and electricity are non-existent.

Local residents are divided. "The government hasn't brought us anything", said a father of three. "If we refuse this we might not get anything else. How will we pay our school fees for our children if we do not agree?"

But local conservation officials believe too much will be lost. "If the plantation comes we will lose all of our natural resources", they say.

### ***Tasks***

1. Translate the text and define the problems of Kenyan nature reserve.
2. Speak about people's attitude to the ecological problems.

## ***HOW RELENTLESS LOSS OF HABITAT THREATENS FIRST PRIMATE EXTINCTION FOR A CENTURY***

A detailed assessment of the 394 species of primates from South America to Indonesia has found that 29 per cent are in danger of disappearing due to hunting, habitat loss and climate change. Some are already on the brink of extinction, it said.

A report by the World Conservation Union has identified the 25 most endangered primates on the planet. All of them live in the world's biodiversity "hotspots" which are exceptionally rich in wildlife.

"You could fit all the surviving members of these 25 species in a single football stadium. That's how few of them remain on Earth today", said president of Conservation International. The situation is worst in Asia, where tropical forest destruction and the hunting and



trading of monkeys puts many species at terrible risk. Even newly discovered species are severely threatened from loss of habitat and could soon disappear.

Overall 114 of the 394 species of apes and monkeys are classified as threatened with extinction.

Protecting forests from logging would preserve the habitats of many endangered primates while at the same time protecting the planet against climate change. By protecting the world's remaining tropical forests, we save primates, while preventing more carbon dioxide from entering the atmosphere to warm the climate.

### ***Exercises***

1. Decide whether the following statements are true or false.

1) 394 species of primates are in danger of disappearing due to severe diseases.

2) A report by the ASPCA (the American Society for the Prevention of Cruelty to Animals) has identified the 25 most endangered primates on the planet.

3) You could fit all the surviving members of the 25 species in a single football stadium.

4) The situation with primates is best in Asia where there is no tropical forest destruction.

5) Protecting forests would preserve the habitats of many endangered primates.

2. Speak about the endangered species using true statements.

## ***MEET SOME CHARACTERS OUT OF THE BLUE***

The National Seal Sanctuary set in the picturesque Helford Estuary, is a haven for some of the marine world's most enchanting creatures.

A busy rescue centre caring for dozens of injured and orphaned seal pups and ultimately returning them to the wild, the Sanctuary is also a permanent home for a lively community of adult seals and sea-lions.

The highlight of any visit is feeding time when Benny, our oldest resident at 38 years of age, Spitfire, Scooby, Sheba and Anneka and the rest of the endearing creatures all have their own amusing set of

antics for attracting more than their fair share of fish. Meet Rocky, the blind but extremely inquisitive sea-lion; Charlie, also known as Bopping Harry, who arrived at the Sanctuary with bullet wounds in his head; Twiggy, a recent arrival; Scooby, who slaps his flippers against his side to get more attention – and more fish – at feeding time; Carus, a magnificent bull sea-lion and probably the largest animal at the Sanctuary, weighing in at around 600lbs. Each individual has his or her own personal way to win your heart and make you laugh!

The Seal Sanctuary first opened its doors in 1957 before moving to its present location here at Gweek in 1976. Each year, up to 30 seal pups are rescued from near certain death and brought to the Sanctuary, where they are cared for until they're fit to be released back into the wild. Generally, seal pups can be seen being cared for in our fully equipped hospital between the months of September and February.

The fascinating story of seal rescue and release begins in our audio visual and interpretation area, and continues throughout our seal hospital, where much of the valuable rehabilitation work takes place.

This specially equipped facility is staffed by a dedicated team of experts, who provide round the clock care and attention to the many sick and injured seal pups which arrive every year.

Once on the road to recovery, the young pups are moved to our outdoor nursery and convalescence pools where they will gain further body weight as well as learning the skills necessary to ensure their survival when they are finally return home to the sea.

**Task.** Read the text and find the sentences showing that:

1. A busy rescue centre does a lot to save seals with problems.
2. Seal pups were on the brink of extinction before having been brought to the Sanctuary.
3. People working in the Rescue centre are able to help the animals.
4. There are all necessary facilities to save sick and injured seal pups.
5. All the animals are especially funny at feeding time.

## 7. SUPPLEMENTARY READING

### **GRAND CANYON**

Grand Canyon is a fascinating place. Odd shapes and brilliant colors emerge among its countless ravines and promontories as the day floods them with light, they glow, darken, and disappear as the sun passes to the west. Dusty sharp scents, sounds made puny by the canyon's vastness, the roughness of the rocks under our fingers – one sensation leads to another and then to another, awakening our curiosity and conjuring our dreams...

Millions of people visit Grand Canyon every year, yet each has something different in mind... The Canyon is vast enough, complex enough, to beckon and reward the seeker in each of us...

On a still morning at Lipan Point, faint roaring can be heard from far below. It is the sound of a power whose strength is alien to us, because its partner is time on a scale so vast that few of us can even begin to imagine it.

However from a geologist's perspective the Colorado River is a recent arrival on the scene, a fast worker that has dug the canyon in less than five and a half million years. Because its headwaters in Colorado are almost two miles above sea level, the river picks up tremendous velocity as it plunges toward the Gulf of California. And Grand Canyon is just one of a series of canyons the river has carved in its rush to the sea... While the river deepens the Canyon, other erosional forces widen it. Erosion nibbles Grand Canyon into towering cliffs alternating with gentle slopes...

During the long winter, moisture seeps into cracks in the rocks, prying them apart as it freezes overnight. In spring and summer, streams of snow-melt and rain carry loosened gravel and boulders down the Canyon's steep walls to the river, gouging out tributary canyons and isolating ridges. The tributary canyons funnel debris into the river in heaps. Turbulent rapids occur where the river hurls its might against these obstacles, creating white, frothing waves that are not only visible, but audible from the rim a mile or more above.

Rain becomes acidic as it combines with carbon dioxide in the atmosphere. It can actually dissolve limestones, including the cement holding grains of sandstone together...

Gravity plays a part in erosion too, triggering landslides of poorly-cemented formations and prompting unsupported rocks to fall spectacularly...

The carving of Grand Canyon has laid our planet's history open in cross-section, revealing rocks that tell us of past worlds, of environments utterly unlike the one before us now. In one glance from the rim, we can see the remains of practically any kind of landscape found on Earth today. Some of the layers are rough and sandy, some are fine; some contain the fossils of sea creatures, while others show the imprints of ferns. Grand Canyon gives us a sense of continuity with the landscapes and life forms that have gone before us...

At Grand Canyon... the sunlight is so intense, the air so pungent with pine, sagebrush, and cliffrose, that the atmosphere is almost palpable...

On rainy days, water vapor bends sunbeams into multi-hued rainbows. Iridescent ice crystals glimmer on cold, clear afternoons... The stars are brilliant – their glitter is sharp-edged yet pulsing in the velvet blackness overhead. We can see our very galaxy edgewise in all its splendor; the Milky Way like a dusting of diamonds across the sky...

At Grand Canyon, the sky is impossible to ignore. There are many subjects of interest here – the rocks, the river, flowers, and history among them – but it is the skies of Grand Canyon that those who love it can never forget.

The walls of Grand Canyon are pocked with many caverns, and the dry Southwestern climate has made them ideal repositories for evidence of past environments. Well-preserved contents show that these caves have provided shelter to some rather unusual occupants over the millennia.

In 1936, there was discovered a large cave behind a low opening above the river. Clods of dried manure buried the cave's floor. On analyses, these proved to be the droppings of Shasta ground sloths, which are now extinct. Scientists later found sloth bones, hair, and claws as well. The big bear-like creatures had apparently made the cave their den from forty to about eleven thousand years ago...

Caves in the Redwall Formation also contain the remains of two different species of condors. One has since become extinct, but there are still a few California condors that were raised in captivity. Grand Canyon is free of the hunters and power-lines that threaten condors elsewhere. If efforts to increase the numbers of California condors succeed, biologists consider Grand Canyon to be one of the best places to release them into the wild.

Grand Canyon's rocks tell us of past environments, of lost worlds teeming with forms of life that became extinct before the dinosaurs. Today within the Canyon we also find a marvelous array of living flora and fauna: various plants that twine, bristle, or sprawl as well as prowling, flapping, and swimming animals. Life takes so many forms here! There are at least fifteen hundred different species of plants – mosses and mushrooms, horsetails and grasses, wildflowers, cactuses, shrubs, and trees. Among them live two hundred and eighty-seven kinds of birds, eighty species of mammals, and fifty-eight reptiles and amphibians...

Living things have developed adaptations to cope with conditions like those at Grand Canyon. Each creature, every plant, is a marvel of fitness for what to us can be a daunting environment.

Several animals and plants of Grand Canyon are protected under the Endangered Species Act. Bald eagles and peregrine falcons are doing very well... Some creatures are listed as threatened...

In addition to working for its preservation, people have responded to Grand Canyon in image, word, and music ever since they became aware that it existed. The messages in these creative efforts are many – awe, communion, adventure, sheer survival – but they are all variations on a theme: the human spirit encountering the natural world.

*(From "Grand Canyon. The Vault of Heaven" by Susan Lamb)*

## **TEMPERATURE**

Even small changes in global average temperatures can have enormous effects on climate patterns. Any disruption in climate patterns can dramatically affect the distribution of rainfall, storms and droughts, winds and ocean currents.

In temperate latitudes the annual temperature shifts result in hot summers and cold winters. People living there are used to them. But a change in the global average temperature is different. The shifts in the climate pattern may occur so swiftly that effective adaptation may well be impossible.

As global temperatures increase, the warming is not uniform throughout the earth. Different parts absorb more or less heat from the sun... The tropics on both sides of the equator get more heat because the sun's rays strike them directly from the middle of the sky. The polar regions get less heat because the sun's rays strike glancingly (indirectly) at the surface... But another important factor determining the amount of heat absorbed by different parts of the earth is reflection. The surface reflects the sun's rays back into space. Ice and snow act like mirrors, reflecting more than 95 percent of the heat and light that strike them. By contrast, the water of the ocean absorbs more than 85 percent of the heat and light it receives from the sun. This difference between reflective and absorptive surfaces has the strongest influence on the climate at the two poles.

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English Autumn mornings are often like mornings nowhere else in the world. The air is cold, the floorboards are cold. It is perhaps this coldness which sharpens the tang of the hot cup of tea. Outside, steps on the gravel crunch a little more loudly than a month ago because of the very slight frost. There is a smell of toast. And on the block of butter small grains of toast from the last impatient knife. Outside, there is sunlight which is simultaneously soft and very precise. Every leaf of each tree seems separate.

*(From "The Final Visit", by J. Berger)*

## **THE BEAUTY BEFORE US**

We topped the rise, looked down on the wood and halted in our tracks, catching our breath at the beauty before us. A little way off, three yellow maples shone brighter than the autumn sun itself. The graceful mountain ash to our left was so laden with coral berries that I almost feared for its slender branches.

Without a word we walked forward across the bleached grass of the intervening field and soon passed through the gap in the beech

hedge, all its crisp brown leaves still bravely held. Inside, a group of hollies crouched, their crimson berries glowing against the olive of their scalloped leaves. The path through the woods was narrow, its surface cut up by horses' hooves, and fringed with bracken, the fronds curled russet, the stems pale as ripe straw.

The slanted sunlight made all the more welcome the green of the moss on the tree trunks, for nowhere else was there any of his colour to be seen. From above, a sudden bright spiral of song made us raise our heads. There on the tip of a bare bough, his fiery throat pulsing, his brown feathers hugged close, was Robin Redbreast, the very spirit of autumn.

*(A. R. Ward)*

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It was wretched weather; stormy and wet, stormy and wet; and mud, mud, mud, deep in all the streets. Day after day, a vast heavy veil had been driving over London from the east, and it drove still, as if in the east there were an eternity of cloud and wind. So furious had been the gusts, that high buildings in town had had the lead stripped off their roofs; and in the country, trees had been torn up, and sails of windmills carried away; and gloomy accounts had come in from the coast, of shipwreck and death. Violent blasts of rain had accompanied these rages of wind, and the day just closed as I sat down to read had been worst of all.

We lived at the top of the house, and the wind rushing up the river shook the house that night, like discharges of cannon, or breakings of a sea. When the rain came with it and dashed against the windows, I thought, raising my eyes to them as they rocked, that I might have fancied myself in a storm-beaten light-house. Occasionally, the smoke came rolling down the chimney as though it could not bear to go out into such a night; and when I set the doors open and looked down the staircase, the staircase lamps were blown out; and when I shaded my face with my hands and looked through the windows, I saw that the lamps in the court were blown out, and that the lamps on the bridge and the store were shuddering, and that the coal fires in barges on the river were being carried away before the wind like red-hot splashes in the rain.

*(From "Great Expectations" by Ch. Dickens)*

## ***THE GARDEN OF THE GODS***

It had been one of those prodigious, desiccating, earth-cracking summers that was so hot it even bleached the sky to a pale end-of-summer, forget-me-not colour and flattened the sea so that it lay like a great blue pool, unmoving, warm as fresh milk. At night you could hear the floors and shutters and beams of the villa shifting and groaning and cracking in the warm air as the last juices were sucked out of them. The full moon would rise like a red coal, glowering down at us from the hot velvety sky, and in the morning the sun was already too warm to be comfortable ten minutes after it appeared. There was no wind and the heat pressed down on the island like a lid. On the hillside in the breathless air, the plants and grasses withered and died until they stood there, bleached as blonde as honey, crisp as wood shavings. The days were so hot that even the cicadas started singing earlier and siesta-ed during the heat of the day, and the ground was baked so that there was nowhere you could walk without shoes.

The villa represented to the local animal life a series of large wooden caves which were perhaps half a degree cooler than a surrounding olive, orange and lemon groves, and so they flocked to join us. At first I was naturally blamed for this sudden influx of creatures but eventually the invasion became so comprehensive that even my family realized I could not be responsible for quite such a large quantity and variety of life forms. Battalions of black ticks marched into the house and beset the dogs, massing in such numbers on their ears and heads that they looked like chain-mail (кольчуга) and were just as difficult to remove. In desperation we had to douse them with kerosene, which made the ticks drop off. The dogs, deeply insulted by this treatment, slouched, panting, round the house, reeking of kerosene, shedding ticks in vast quantities. Larry suggested that we put up a notice saying 'Danger – inflammable dogs' for, as he rightly pointed out, if anyone lit a match near one of them the whole villa was liable to go up in flames like a tinder box (трутница).

The kerosene only gave us a temporary respite. More and more ticks marched into the house until at night one could lie in bed and watch rows of them performing strange route marches around the room. The ticks, fortunately, did not attack us but confined themselves to driving the dogs mad. However, the hordes of fleas that decided to



take up residence with us were another matter. They arrived suddenly, out of nowhere, it seemed, like the Tartar hordes, and over-ran us before we realized what was happening. They were everywhere and you could feel them hopping on to you and running up your legs as you walked around the house. The bedrooms became untenable and for a time we took our beds out on to the broad verandahs and slept there.

But the fleas were not the most objectionable of the lesser inhabitants of the house. The tiny scorpions black as ebony, infested the bathroom where it was cool. Leslie going in late one night to clean his teeth was ill advised (неблагоразумный) enough to go bare-foot and was stung on the toe. The scorpion was only half an inch long but the agony of the bite was out of all proportion to the size of the beast and it was some days before Leslie could walk. The larger scorpions preferred the kitchen area, where they would quite blatantly sit on the ceiling looking like misshapen aerial lobsters.

At night when the lamps were lit, thousands of insects appeared; moths of all shapes, from tiny fawn-coloured ones with wings shaped like tattered feathers, to the great big, striped, pink and silver hawk moths, whose death dives at the light (стремительные броски на свет) were capable of breaking the lantern chimney. Then there were the beetles, some as black as mourners, some gaily striped and patterned, some with short, club-shaped antennae, others with antennae as long and thin as a Mandarin's moustache. With these came a multitude of lesser forms of life, most of them so small that you needed a magnifying glass to make out their incredible shapes and colours.

Naturally, this conglomeration of insects was marvellous as far as I was concerned. Each evening I hung about the lights, my collecting boxes and bottles at the ready, vying (от 'vie' - соперничать) with the other predators for choice specimens. I had to look sharp, for the competition was brisk. On the ceiling were the geckoes, pale, pink-skinned, spread-fingered, bulbous-eyed, stalking the moths and beetles with miniscule care (с скрупулёзной тщательностью) Alongside them were the green, swaying, hypocritical mantis with their mad eyes and chinless faces, moving on slender, prickly legs like green vampires.

On ground level I had to contend with enormous chocolate-coloured spiders like lanky, furry wolves, who would lurk in the sha-

dows and scuttle out and snatch a specimen almost from my very fingers. They were aided and abetted by the fat map toads in their handsome patchwork skins of green and silvery grey who hopped and gulped their way, wide-eyed with astonishment, through this largesse of food, and the swift, furtive, and somehow sinister scutigera. This form of centipede had a body some three inches long and as thick as a pencil and flattened; around the perimeter was a hedge, a fringe of long, slender legs. When it moved, as each pair of legs came into action, these fringes appeared to undulate in waves, and the animal progressed as smoothly as a stone on ice, silent and unnerving, for scutigera were among the most ferocious and skilful of hunters.

One evening, the lights had been lit and I was waiting patiently to see what they were going to add to my collection; it was still fairly early so that most of the predators, apart from myself and a few bats, had not put in an appearance. The bats whipped up and down the verandah as fast as whiplashes, taking the moths and other succulent dainties from within inches of the lamp, the wind from their wings making the flames shudder and leap. Gradually, the pale dragon-green afterglow of the sunset faded, the crickets started their prolonged musical trills, the gloom of the olive trees was lit by the cold lights of the fireflies, and the great house, creaking and groaning with sunburn, settled down for the night.

The wall behind the lamp was already covered by a host of various insects which, after an unsuccessful suicide attempt, were clinging there to recover themselves before trying again. At the base of the wall, from a minute crack in the plaster, emerged one of the smallest and fattest geckoes I had ever seen. He must have been newly hatched for he measured only about an inch and a half in length, but obviously the short time he had been in the world had not prevented him from eating prodigiously for his body and tail were so fat as to make him appear almost circular. His mouth was set in a wide, shy smile and his large dark eyes were wide and wondering, like the eyes of a child that sees a table set for a banquet. Before I could stop him he had waddled slowly up the wall and started his supper with a lacewing fly; these creatures, with their transparent wings like green lace and their large green-gold eyes, were favourites of mine and so I was annoyed with him.

Gulping down the last bit of gauzy wing, the baby gecko paused, clinging to the wall, and mused for a bit, occasionally blinking his eyes. I could not think why he had chosen the lacewing, which was a bulky thing to handle, when he was surrounded on all sides by a variety of small insects which would have been easier for him to catch and eat. But it soon became apparent that he was a glutton whose eyes were bigger than his stomach. Having hatched from an egg – and, therefore, lacking a mother's guidance – he was under the strong but erroneous impression that all insects were edible and that the bigger they were the quicker they would assuage his hunger. He did not even seem to be aware of the fact that for a creature of his size some insects could be dangerous. Like an early missionary, he was so concerned with himself that it never occurred to him that somebody might look upon him simply as a meal.

Ignoring a convention of small and eminently edible moths sitting near him, he stalked a great, fat, hairy Oak Eggar (дубовый шелкопряд) whose body was almost bigger than his own; he misjudged his run-in (боевой курс, подход), however, and merely caught her by the tip of one wing. She flew off and such was the power of her brown wings that she almost tore the gecko's grip from the wall and carried him with her. Nothing daunted, after a brief rest, the gecko launched an assault on a longicorne beetle (жук носорог) his own size. He would never have been able to swallow such a hard, prickly monster, but this apparently did not occur to him. However, he could not get a grip on the beetle's hard and polished body, and all he succeeded in doing was knocking it to the floor.

He was just having another brief rest and surveying the battlefield when, with a crisp rustle of wings, an enormous mantis (богомол) flew on to the verandah and alighted on the wall some six inches away. She folded her wings with a noise like the crumpling of tissue paper and, with viciously-pronged arms raised in mock prayer, stared about her with lunatic eyes, twisting her head from side to side as she surveyed the array of insects assembled for her benefit.

The gecko, it was fairly obvious, had never seen a mantis before and did not realize how lethal they could be; as far as he was concerned, it was an enormous green dinner of the sort that he had dreamed about but never hoped to obtain. Without more ado, and ig-

noring the fact that the mantis was some five times his size, he began to stalk her. The mantis, meanwhile, had singled out a Silver-Y moth and was moving towards it on its attenuated, elderly-spinster legs, pausing occasionally to sway to and fro, the personification of evil. Hard in her wake came the gecko, head down, grimly determined, pausing whenever the mantis did, and lashing his ridiculous little fat tail to and fro like an excited puppy.

The mantis reached the oblivious moth, paused, swaying, then lashed out with her fore-claws and seized it. The moth, which was a large one, started fluttering frantically and it required all the strength of the mantis's cruelly barbed forelegs to hold it. As she was struggling with it, looking like a rather inept juggler, the gecko, which had lashed himself into a fury with his fat tail, launched his attack. He darted forward and laid hold of the mantis's wing-case like a bulldog. The mantis was busy trying to juggle the moth round in her claws and so this sudden attack from the rear knocked her off balance. She fell to the ground, carrying with her the moth and the gecko. When she landed she still had the gecko hanging grimly to her wing-case. She relinquished the moth, which was by now almost dead, so as to leave her sabre-sharp front claws free to do battle with the gecko.

I had just decided that this was the point where I should step in to add a mantis and a gecko to my menagerie when another protagonist entered the arena. From the shadows of the grape-vine a scutigera slid into view, a moving carpet of legs, skimming purposefully towards the still-twitching moth. It reached it, poured itself over the body, and sank its jaws into the moth's soft thorax. It was a fascinating scene; the mantis bent almost double, slashing downwards with her needle-sharp claws at the gecko who, with eyes protruding with excitement, was hanging on grimly though he was being whipped to and fro by his large antagonist. The scutigera meanwhile, deciding it could not move the moth, lay draped over it like a pelmet, sucking out its vital juices.

It was at that point that Theresa Olive Agnes Dierdre, known as Dierdre for short made her appearance. Dierdre was one of a pair of enormous common toads that I had found, tamed with comparative ease, and established in the tiny walled garden below the verandah. Here they lived a blameless life among the geraniums and tangerine

trees, venturing up on to the verandah when the lights were lit to take their share of the insect life.

So taken up was I by the strange foursome in front of me that I had forgotten all about Dierdre and when she appeared on the scene I was unprepared, lying as I was on my stomach with my nose some six inches from the battlefield. Unbeknownst to me, Dierdre had been watching the skirmishing from beneath a chair. She now hopped forward fatly, paused for a brief second, then, before I could do anything, leapt forward in the purposeful way that toads have, opened her huge mouth and with the aid of her tongue flipped both scutigera and moth into her capacious maw. She paused again, gulping so that her protuberant eyes disappeared briefly, and then turned smartly to the left and flipped both mantis and gecko into her mouth. Only for a moment did the gecko's tail protrude, wriggling like a worm between Dierdre's thick lips, before she stuffed it firmly into her mouth, toad-fashion, with her thumbs.

I had read about food chains and the survival of the fittest but this I felt was carrying things too far.

Apart from anything else, I was annoyed with Dierdre for spoiling what was proving to be an absorbing drama. So that she would not interfere with anything else I carried her back to the walled garden she shared with her husband, Terence Oliver Albert Dick, under a stone trough full of marigolds. I reckoned she had eaten quite enough for one evening anyway.

*(From "The Garden of the Gods" by Gerald Durrell)*

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## **АНГЛИЙСКИЙ ЯЗЫК И ЭКОЛОГИЯ**

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