

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ОБРАЗОВАНИЮ
ВОРОНЕЖСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ

INTRODUCTION TO BIOLOGY
Учебное пособие

Специальность "Биология" – 020201 (011600)

Воронеж, 2005

Утверждено научно-методическим советом факультета романо-германской филологии (протокол № 7 от 20.10.05)

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Учебное пособие подготовлено на кафедре английского языка факультета РГФ и предназначено для студентов 1 курса вечернего отделения биолого-почвенного факультета. Структура и содержание каждого урока пособия предполагают поэтапное овладение материалом и его последующее закрепление. Задания и содержание предтекстовых и послетекстовых упражнений, направленных на снятие лексических и грамматических трудностей, связанных с овладением словообразовательными и грамматическими моделями, подводят студентов к умению продуктивного использования терминологической лексики в речи и должны способствовать формированию навыков беспереводного понимания читаемого.

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Unit I

Step I

Ex. 1. Practise the following for pronunciation:

science ['saɪəns]	discover [dɪs'kʌvə]
scientific [saɪən'tɪfɪk]	control [kən'trəʊl]
biology [baɪ'ɒlədʒi]	diversity [daɪ'və:sɪti]
biological [baɪəu'lɒdʒɪkəl]	function ['fʌŋkʃən]
biologist [baɪ'ɒlədʒɪst]	mankind [mæn'kaɪnd]
guide [gaɪd]	knowledge ['nɒlɪdʒ]
contribution [kɒntri'bju:ʃən]	healthy ['helθi]
increase [ɪn'kri:s]	method ['meθəd]
increase ['ɪnkri:s]	vaccine ['væksɪ:n]
supply [sə'plaɪ]	penicillin [peni'sɪlɪn]
variety [və'raɪəti]	sulpha ['sʌlfə]
disease [di'zi:z]	blood [blʌd]
life [laɪf]	circulate ['sə:kjuleɪt]
lives (life pl.) [laɪvz]	digest [dɪ'dʒest]

Ex. 2. Translate the following words paying attention to the affixes.

a) Biology (n), biologist (n), biological (adj.); function (n), functional (adj.); live (v), life (n), lives (n, pl), living (adj.), nonliving (adj.); health (n), healthy (adj.); inform (v), information (n); solve (v), solution (n); science (n), scientific (adj.); develop (v), development (n); variety (n), vary (v); discover (v), discovery (n); prevent (v), prevention (n); produce (v), product (n), production (n); circle (n), circulate (v), circulation (n).

b) Many nouns and verbs in English have the same form:

Function (n), function (v); affect (n), affect (v); study (n), study (v); increase (n), increase (v); supply (n), supply (v); control (n), control (v).

Ex. 3. Match the word combinations in column A with their equivalents in column B:

A		B	
1.	to study life in all its diversity	a.	методы профилактики и лечения болезней
2.	the diversity of living things	b.	поддерживать здоровье

3.	to give* ¹ information	c.	переваривать пищу
4.	food supply	d.	оказывать воздействие на человечество
5.	mysteries of life	e.	решение проблем
6.	to affect mankind	f.	обнаружить причины заболеваний
7.	knowledge of biology	g.	давать информацию
8.	solution of problems	h.	пищевой запас
9.	scientific methods of investigation	i.	циркуляция крови
10.	varieties of plants and animals	j.	внести (большой) вклад в (науку)
11.	methods of prevention and cure of diseases	k.	тайны жизни
12.	to digest food	l.	изучать жизнь во всем ее многообразии
13.	to discover the causes of diseases	m.	разновидности растений и животных
14.	to make* a (great) contribution to (science)	n.	научные методы исследования
15.	blood circulation	o.	разнообразие живых существ
16.	to keep* healthy	p.	знание биологии

Ex. 4. State the tenses used in the following sentences.

1. I am studying biology. 2. Students of the biological faculty study different subjects. 3. Biologists have solved many mysteries of the body. 4. They began* to investigate this problem last year. 5. What branches of biology will you study in the third course? 6. He has been working at this problem for a year and a half. 7. They were* discussing this problem when we came. 8. She will be going to Moscow at this time tomorrow. 9. After they had* performed an experiment on the monkey they came to the conclusion that they had* been* right in their assumption. 10. What branch of biology are* you going to choose for your future specialization? 11. He never stopped to admire the beauties of nature. He used to spend hours watching an insect moving on a stem, leaf or flower of a plant. 12. Don't worry! He will have come by that time. 13. They had* been* working at the laboratory for two years when the first results of the experiments appeared. 14. I am sure they will have been working in the laboratory for hours to get the results they need.

Ex. 5. Put the verbs in brackets into a proper tense form.

1. Due to the discovery of the moss *Sphagnum* and the vaccine made of it biologists (save) millions of lives during World War II. 2. Louis Pasteur (discover) the causes of such a disease as smallpox. 3. The discovery of viruses at the beginning of the 20th century (lead*) to a solution of many medical and biological problems. 4. With the invention of the microscope biology (give*) scientists a lot of information about

¹ All the irregular verbs will be marked in the exercises with the asterisk (*)

unicellular living things. 5. The absence of vitamins (bring* on) diseases. 6. The magnifying power of lenses made by Leeuwenhoek (make*) it possible to see tiny living things. 7. Scientists (do*) their best to increase our food supply. 8. The invention of the microscope (help) to discover many mysteries of life. 9. Biology (study) life in all its diversity.

Step 2

Ex. 6. Read the text.

Biology is the science of life. It studies life in all its diversity. Biology tells us about our body: how it is constructed and how it functions. It gives us information about other living things, and how their lives affect mankind. A knowledge of biology will help you to keep healthy. It will be your guide in solving many of everyday living and scientific problems.

Biologists have made a great contribution to science. They have increased our food supply. They have developed new and better varieties of plants and animals. Scientific methods of farming have given us much more food.

Biologists control many diseases. They have saved millions of lives by discovering the causes of these diseases and methods of their prevention and cure. Vaccines, penicillin and sulpha are products of the biological laboratory. Biologists have solved many mysteries of the body. They have discovered how blood circulates, how food is digested and many other secrets of life. They are now working in different fields of biology and their studies may lead to a solution of many problems.

Ex. 7. Which of the following headlines goes with the content of the text better? Give a good reason for your choice.

1. Biology and the living world.
2. Biology and our everyday life.
3. Biology and the subject of its study.
4. Biology and its services to mankind.

Ex. 8. Match a line in A with a line in B to define the branches of biology and relative sciences.

A		B		
1.	Agriculture	is the study	a.	and development of new medicines and drugs on the basis of biochemical investigations.
2.	Anatomy		b.	discovering the causes of diseases and methods of their prevention and cure.
3.	Breeding		c.	of how a living body is constructed.
4.	Medicine		d.	of scientific methods of farming.
5.	Pharmaceutical chemistry		e.	of how a living body functions.

6.	Physiology		f.	developing new and better varieties of plants and animals.
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Ex. 9. Fill in the blanks with the words from the text.

1. Biologists study life in all its 2. Biology gives us information about other ... things. 3. The life of other living things ... mankind. 4. Biologists have made a great ... to natural sciences. 5. Biologists have increased our food 6. They have ... new and better varieties of plants and 7. Scientific methods of ... have given us much more food. 8. Biologists ... many diseases. 9. Biologists have ... millions of lives by discovering the ... of many diseases. 10. Biologists have discovered and developed the methods of ... and ... of many diseases.

Ex. 10. Fill in the blanks with proper prepositions.

1. Vaccines, penicillin and sulpha are products ... the biological laboratory. 2. Many secrets ... life have been discovered ... biologists. 3. Biologists are working ... different fields ... this science. 4. The studies ... biologists lead ... a solution ... many problems. 5. Biology studies life ... all its diversity. 6. It gives us information ... other living things. 7. Biologists have made a great contribution ... natural sciences. 8. Biologists saved millions of lives ... discovering the causes ... these diseases.

Ex. 11. Using the text, give the equivalents to the following word combinations:

секреты жизни, сохранять здоровье, решать научные проблемы, вносить вклад в науку, повседневные проблемы, выводить новые и лучшие разновидности растений и животных, контролировать болезни, методы земледелия, спасти миллионы жизней, причины заболеваний, работать в различных областях биологии, привести к решению проблем.

Ex. 12. Reproduce the text according to the following plan:

- a) the subject matter of biology;
- b) branches of biology and relative sciences;
- c) its contribution to sciences and its services to mankind.

Ex. 13. Translate the text without a dictionary.

Biology is the science of living organisms. It is concerned with their nature, functions, reproduction, and place in their environment. It is rooted in physics and chemistry and many of its interpretations are made in terms of these sciences and of mathematics. It is bound closely with geology and meteorology, and applications of its principles are found in anthropology, psychology, sociology, agriculture, medicine, industry, and indeed, in everyday living. Inasmuch as one of its ultimate aims is

thorough understanding of living organisms including man, biology is entitled to be called the most vital of the sciences.

Unit II

Step 1

Ex. 1. Match the word combinations in column A with their equivalents in column B:

A		B	
1.	social sciences	a.	стать членом научного кружка / клуба
2.	to have* an opportunity (to do sth.)	b.	приобрести знания
3.	a modern well-equipped research laboratory	c.	иметь склонность к научной работе
4.	the problem under investigation	d.	общественные науки
5.	to get* acquainted with (the basic laws of biology)	e.	приобретать знания
6.	to lecture in a subject	f.	исследуемая проблема
7.	to attend lectures on (physics ...)	g.	современная, хорошо оборудованная научно-исследовательская лаборатория
8.	narrow specialization	h.	иметь возможность (сделать что-то)
9.	a specialized course in (biochemistry)	i.	выпускник биологического факультета
10.	to choose* a branch of biology as one's future speciality	j.	посещать лекции по (физике...)
11.	to join a scientific circle / club	k.	узкая специализация
12.	to acquire knowledge	l.	спецкурс по (биохимии)
13.	a graduate of the biological faculty	m.	читать лекции по предмету
14.	to have* a bent for (research work)	n.	выбрать отрасль биологии в качестве своей будущей специальности
15.	to apply for a post-graduate course	o.	ознакомиться с (основными законами биологии)

Ex. 2. Which of these branches of biology do you take a special interest in and why?

biophysics, biochemistry, botany, microbiology, zoology, physiology of man and animals, physiology of plants, genetics.

Ex. 3. Put the verb "to be*" into a proper tense form.

1. Vaccines, penicillin and sulpha (be) products of the biological laboratory. 2. Elementary training in general biology (be) essential for every educated person. 3. Medicine, physiology, agriculture and forestry (be) the fields of knowledge requiring elementary training in general biology. 4. In external appearance plants (be) usually green. 5. The aim of his experiments (be*) to learn more about how the body adapts to weightlessness.

Ex. 4. State the tense and voice used in the following sentences.

1. Such functions as sensation, motion, food-taking and respiration are called life functions. 2. To find this out hundreds of guesses were made*, thousands of experiments staged. 3. We call sciences studying nature natural sciences. 4. Botany is* the scientific study of plants. 5. With the invention of the microscope scientists saw* things that had been hidden* before. 6. In certain parts of the tropics the arrival of the rainy season has stimulated growth of plants. 7. A lot of investigations have been conducted in this field. 8. No important animal phylum will be restricted to these environments. 9. Almost all the main branches of the animal kingdom are represented in the ocean. 10. Carbon dioxide is constantly being moved from place to place so as to be available everywhere.

Ex. 5. Use the Passive voice in the following sentences.

Model: *Biology gives* a lot of information about different living things*

A lot of information about different living things is given by biology.

1. The life of other living things affects mankind. 2. Biologists have increased our food supply. 3. They have developed new and better varieties of plants and animals. 4. Scientific methods of farming have given us much more food. 5. Biologists control many diseases. 6. They have saved millions of lives. 7. Biologists have discovered and developed the methods of prevention and cure of many diseases. 8. Biologists have solved many mysteries of the human body. 9. Biologists have discovered how blood circulates.

Ex. 6. Translate the following sentences into Russian paying attention to the meaning of each modal verb.

1. Some animals can exist under the immense pressure of the deep seas. 2. They are at the University now but they are to meet here. 3. The crop yields are to be increased this year. 4. He has to translate a new article so he will have to work the whole evening. 5. You must read this book. 6. He has to read this book. 7. You should read this book. 8. You are to read this book. 9. You ought to read this book. 10. We have to develop new varieties of plants. 11. We had to adapt the plants to new conditions. 12. We shall have to create suitable conditions for this experiment. 13. Our teacher is to be here at 9

o'clock. 14. This plant has to be treated with cold. 15. These fruits are to be crossed. 16. You ought to plant these seeds in spring. 16. Green plants are so common that you may never stop to think how wonderful and how important they are. 17. The "Beagle" was to make a voyage around the world. 18. He had to learn poetry instead of collecting plants. 19. The giant seaweeds may be more than 100 feet long. 20. The fungi have no chlorophyll. They must get their food from other plants and animals.

Step 2

Ex. 7. Read the text.

I am a student of the biological faculty. Our faculty is one of the largest faculties of the University. We study different subjects: Botany, Anatomy, Microbiology and many others. Besides these subjects we study some social sciences and English. We study English to be able to, read scientific books on biology and discuss biological problems.

There are many departments in our faculty: of botany, of zoology, of microbiology, of physiology of man and animals, of physiology of plants, of genetics, and of soil science. Besides there are research laboratories and 3 museums. Every student has an opportunity to work in modern, well-equipped laboratories, where different problems of biology are under investigation.

Students get acquainted with all branches of biology. They are lectured in various subjects of natural science, namely botany, zoology, anatomy, microbiology, biophysics, biochemistry, soil science, and genetics.

During the first two years they attend lectures on mathematics, physics, chemistry, some subjects of social sciences and foreign languages. In the third year more narrow specialization begins. They have several specialized courses and additional practical and research work in the subject they have chosen as their future speciality. Besides attending lectures they may join some scientific circles and choose a problem to work on according to their bents. All of them know that biology is the science of glorious past and great future. They do their best to acquire as much knowledge as possible.

Graduates of the biological faculty are assigned to work at laboratories, schools and research institutes. Those who have a bent for research work may apply for a postgraduate course of study.

Ex. 8. Speaking people ask each other different types of questions. The following schemes can help you to compose your questions correctly.

Model 1. An affirmative sentence

Biology	studies	nature
subject	predicate	object
		

Model 2. A general question

○	△	□	□ ?
Do	you	study	English?

1. You are a student of the biological faculty. 2. The faculty is one of the largest in the University. 3. You study different subjects. 4. You study English. 5. Botany department is one of the departments of the faculty. 6. There are three museums at the faculty. 7. Every student has an opportunity to work in a laboratory. 8. Laboratories are modern and well-equipped. 9. Students can join any scientific club at the faculty. 10. You can choose a problem to work on.

Model 3. An alternative question

○	△	□	... or ...?
Do	you	study	English or French?

1. You are a student of the Biology faculty (Chemistry). 2. You study only biology (social sciences too). 4. You study English (French). 4. You are lectured only in biological sciences (relative sciences too). 5. You attend lectures on subjects of natural sciences only (the humanities too). 6. More narrow specialization begins in the third year (first year). 7. You can choose a problem to work at on your own (your teacher does it). 8. You have a bent for research work (you prefer to work at school as a teacher of biology).

Model 4. A special question

□ ?	○	△	□	... ?
Where	do	you	study	English?

1. You are a student of ... faculty. 2. You study ... social sciences. 4. You study ... language. 4. You are lectured in ... sciences. 5. You attend lectures on ... subjects. 6. More narrow specialization begins in ... year. 7. You can choose a problem to work on in ... way. 8. You prefer to work where...

Ex. 9. Work in pairs. Ask your partner:

- if he studies at the biological or chemical faculty;
- if the biological faculty is the largest in the University;
- if he studies biochemistry;
- if there are many departments at his faculty;
- if he gets acquainted with all branches of biology;
- what lectures he attends;

- if he attends lectures on mathematics;
- when narrow specialization begins;
- what specialized courses he has;
- if he can choose a problem to work on according to his bents.

Ex. 10. Act out the following situations.

Work in pairs.

a) You meet a foreign student. Tell him about your studies at the University.

Work as a class.

b) A group of students have come to VSU on an exchange visit. They would like to interview you about your life and studies at the University

Unit III

Step 1

Ex. 1. Practise the following for pronunciation:

kind ['kaind]

provide [prə'vaɪd]

include [ɪn'klu:d]

pierce [piəs]

describe [dɪs'kraɪb]

classification [klæsɪfɪ'keɪʃən]

estimate ['estɪmeɪt]

clothing ['kləʊðɪŋ]

easy ['i:zi]

Ex. 2. Translate the following words, paying attention to the affixes:

estimate (v), estimation (n); provide (v), providence (n), provident (adj); include (v), exclude (v); describe (v), description (n); classify (v), classification (n); feed (v), food (n).

Ex. 3. Translate the following word combinations into Russian:

to live and grow* inside the body, to keep* track of animals, to learn about the living, a system of classification, life depends on...

Ex. 4. Put the verb "to be*" into a proper tense form.

1. There (be) many special fields of knowledge and many phases and principles to which elementary training in general biology is essential. 2. There (be) plants which

have no apparent blossoms. 3. Among animals there (be) a great variety of sizes, shapes and colours. 4. There (be) a system of classification to keep track of this great number of living things. 5. At the dawn of civilization there (be) only a few sciences. 6. There (be) places where there (be) no pronounced seasonal variation in temperature. 7. There (be) few localities where there (be) no animal life. 8. There (be) very few bioluminescent animals in caves. 9. In nature there (be) rarely too much oxygen for animal life. 10. There (be) forms that can reduce their oxygen requirements.

Ex. 5. Put the verbs in brackets into a proper tense form.

1. No one (know) how many different kinds of plants and animal there are. 2. Some scientists (estimate) the number of plants and animals as three million. 3. There (be) some plants and animals that (pierce) our skin. 4. Some animals (feed) on the blood of living things. 5. There (be) many other living things living and growing inside our bodies. 6. By the present time we (learn) much about all the living around us. 7. A system of classification (be set up).

Ex. 6. In the sentences below change the Passive constructions into Active ones:

Model: *Many secrets of life have been discovered by biologists.*

Biologists have discovered many secrets of life.

1. Many secrets of life have been discovered by biologists. 2. Up to the present time it was named and described more than 840000 kinds of animals and 345000 kinds of plants. 3. A system of classification has been set up. 4. Plants and animals are sorted into groups according to their structure. 5. The only light in all this darkness is made by animals themselves. 6. One more method of discovering the presence of that illness has been found. 7. A lot of different kinds of plants and animals have been studied, identified and named.

Ex. 7. Change Active constructions into Passive ones.

Model: *Some scientists estimate the number of plants and animals as three million.*

The number of plants and animals is estimated as three million.

1. Some scientists estimate the number of plants and animals as three million. 2. Many of the plants provide us with food, clothing, shelter and medicines. 3. Some plants and animals can pierce our skin. 4. Certain plants and animals may cause diseases. 5. Scientists study living things with great care. 6. We have learned much about all the living around us.

Ex. 8. Translate the following sentences into Russian.

1. Some mistakes **must have been made** in choosing the methods of investigation. 2. Chalk is made of the shells of little animals. They **must have been** tiny things, for you can only see the shells with a very strong glass. 3. The process of decay of some plants **must have been** very gradual and constant. 4. More **might have been** said about how some of the important advances in biochemistry have been made. 5. The discussion of the previous section **must have been made** it clear that in order to understand the problem of life in general, we must look for the solution in the structure and properties of the living cells. 6. There is actually no reason why this experiment **could not have been performed** by this assistant. 7. What seems easy to us now **might not have been** so some years ago.

Ex. 9. Make up word combinations using the words below.

Model A: *to live, matter ----- living matter*

1. to compose, elements; 2. to grow, plants; 3. to reproduce, animals; 4. to direct, center; 5. to control, animals; 6. to appear, fruits; 7. to surprise, capacities of protoplasm; 8. to separate, membrane; 9. to form, cells; 10. to divide, nucleus; 11. to function, organs; 12. to convince, facts.

Model B: *to consider, problems ----- considered problems*

1. to test, facts; 2. to examine, parts of plants; 3. to remain, elements; 4. to absorb, water; 5. to digest and to assimilate, foods; 6. to control, animals; 7. to know*, data; 8. to disclose, characteristics; 9. to conduct, investigation; 10. to grow* plants; 11. to convert, substances; 12. to dissolve, salts; 13. to suspend, substances.

Ex. 10. Complete the sentences making up Participle constructions from the word combinations given below.

Model A: *Scientists / to classify these organisms differently ...*

1. Scientists (classifying these organisms differently) refer them to different kingdoms.

2. Scientists (having classified these organisms differently) referred them to different kingdoms.

1) scientists / to investigate these problems, 2) lungs / to carry out the function of respiration, 3) plants to perform the function of photosynthesis, 4) a group of young scientists / to conduct investigation in this field, 5) the student / to examine a tiny piece of a plant under a microscope, 6) these experiments / to surprise everybody, 7) these characteristics / to change in a new generation of the plants, 8) substances / to permeate through the openings in the membrane, 9) the cell wall / to encase the protoplasm, 10) the discovery of the cell / to play an important role, 11) the cell membrane / to protect the cell against injury.

Model B: *plants / to be grouped according to their habits...*

1. Plants (grouped according to their structure) form a gender.
2. Plants (being grouped according to their structure) form a gender.

1) problems / to be investigated by scientists, 2) respiration / to be carried out by lungs, 3) photosynthesis / to be performed by plants, 4) metabolic wastes and excretory products / to be ejected from the cell, 5) the cytoplasm / to be moved to another part of the cell, 6) the nutritive substances / to be passed through the membrane, 7) the green tissue of leaves / to be exposed to light, 8) the foods / to be manufactured by plants, 9) inorganic substances / to be converted in plants into organic ones, 10) mineral salts / to be dissolved in water, 11) water / to be left* in the cell.

Ex. 10. Use Participle constructions in the sentences below.

Model A: *All the plants which are grown in this region require fertilizers.*
All the plants grown in this region require fertilizers.

Model B: *There are living things which live and grow inside our bodies.*
There are living things living and growing inside our bodies

Model C: *A system of classification has been set up. It sorts plants and animals according to their structure.*
A system of classification has been set up sorting plants and animals according to their structure.

Model D: *When he conducted his experiments he tried different approaches to the problem.*
Conducting his experiments he tried different approaches to the problem.

1. Medicine, physiology and agriculture are fields of knowledge which require elementary training in general biology. 2. There are plants which have no apparent blossoms. 3. Plant cells have a cell wall which is actually non-living in chemical nature. 4. If some bacteria live and grow inside our bodies they may cause diseases. 5. Some bacteria live and grow inside our bodies and cause diseases. 6. At the conference they discussed the kinds of observations which had been made. 7. We must select the varieties which are being grown for storage. 8. Camels can live in dessert for two or three weeks and eat only dry food and drink no water.

Step 2

Ex. 11. Read the text and tell what it is about in one or two sentences.

No one knows how many different kinds of plants and animals there are. Some scientists estimate the number of three million. Many of them provide us with food, clothing, shelter and medicines. Some, (including several kinds of insects), pierce our skin and feed on the blood. Some of living things even live and grow inside our bodies. In this way they may cause diseases. You can see why scientists study living things with

great care. Our lives may depend on how we have learned about the living around us. Because there are so many different kinds of plants and animals, the task of a biologist is not an easy one. Up to the present time it was named and described more than 840000 kinds of animals and 345000 kinds of plants. To keep track of this great number of living things a system of classification has been set up. Plants and animals are sorted into groups according to the way they are built. For example, the tiger, the leopard, and the lion will be all grouped together. All of them belong to the cat family. All the members of the cat family, in turn, belong to a larger group that includes such meat-eating animals as the dog, the bear. They have teeth that are built for tearing and cutting flesh. Their sharp claws help them to capture and eat their prey. In this way, all plants and animals were classified by their structure. All living plants and animals were divided into two kingdoms: the animal kingdom and the plant kingdom.

Among the smallest and simplest living things there are some that are difficult to classify. There are tiny plant-like cells that can swim about actively in the water. In some cases, the classification of these is still in doubt.

Ex. 12. Find in the text English equivalence to the following Russian words and phrases:

основные задачи биологов, различные виды растений и животных, быть причиной болезни, большое количество живых существ, изучать живые существа; относить(ся) к семейству (кошачьих), в свою очередь, поймать и съесть свою добычу, таким образом, в некоторых случаях.

Ex. 13. Fill in the blanks with the words from the text.

1. ... bacteria may live inside our bodies. 2. They may ... different diseases. 3. Our lives may ... on how we have learned about the living around us. 4. Scientists should study living things with great 5. Up to the scientists have named and described a great number of plants and animals. 6. Scientists of a great number of living things. 7. Scientists have a system of classification. 8. Plants and animals are ... into groups ... to their structure.

Ex. 14. Fill in the blanks with proper prepositions.

1. The life of plants and animals depends ... many factors. 2. Plant cells have been studied ... great care. 3. Even ... the present time scientists discover unknown living things. 4. It's not easy to keep track ... animals in the wild.

Ex. 15. Work in pairs. Ask your partner about

- the usual colour of plants;
- the flowers that plants usually have;

- the size and shape of plants;
- the difference between plants and animals;
- the main likenesses between plants and animals;
- how some scientists estimate the number of plants and animals;
- things plants and animals provide us with;
- things plants and animals feed on;
- diseases plants and animals may cause;
- the problems which scientists face now and why they face these problems;
- how many plants and animals scientists have named and described;
- reasons which caused the system of classification;
- reasons which make it difficult to keep track of animals;
- the principles according to which plants and animals are classified.

Ex. 16. Classify the following words and fill in the table.

Vaccine, skin, medicine, flowers, living things, horticulture, man, blood, hygiene, animals, cell, farming, penicillin, organ, agriculture, insects, secrets of life, forestry sanitation, plants, sulphur, physiology.

Medicine	Living things	Sciences connected with biology	Structure of the body

Unit IV

Step 1

Ex. 1. Practise the following for pronunciation:

special ['speʃəl]

condition [kən'diʃən]

desert ['dezət]

mountain ['maʊntɪn]

oxygen ['ɒksɪdʒən]

important [ɪm'pɔ:tənt]

botany ['bɒtəni]

zoology [zou'ɒlədʒi]

pressure ['preʃə]

temperature ['temprɪtʃə]

substance ['sʌbstəns]

protoplasm ['proutəʊplæzm]

material [mə'tɪəriəl]

microscopic [maɪkrəs'kɒpɪk]

basic ['beɪsɪk]

property ['prɒpəti]

respiration [respə'reɪʃən]

assimilation [əsɪmi'leɪʃən]

growth [grəʊθ]

reproduction [ri:prə'dʌkʃən]

likeness ['laɪknɪs]

conscious ['kɒnʃəs]

Ex. 2. Translate the following words, paying attention to the affixes:

subdivision (n), subdivide (v); define (v), definition (n); exist (v), existence (n); press (v), pressure (n); deep (adj), depth (n); certain (adj), certainly (adv); necessary (adj), necessity (n), necessitate (v); sense (n), sensitive (adj); resemble (v), resemblance (n); proper (adj), properly (adv), property (n); respire (v), respiration (n); assimilate (v), assimilation (n); reproduce (v), reproduction (n); conscious (adj), consciousness (n); fundamental (adj), fundamentally (adv).

Ex. 3. Match the word combinations in column A with their equivalents in column B:

A		B	
1.	to include facts / principles	a.	жить под большим давлением (воды)
2.	in spite of difficult conditions	b.	общие свойства
3.	to live under the immense pressure of (water)	c.	микроскопическая единица
4.	important points of resemblance	d.	включать факты / принципы
5.	general properties	e.	умеренное количество тепла
6.	a microscopic unit	f.	важные черты (особенности) сходства
7.	to take* place in the same manner	g.	несмотря на трудные условия
8.	moderate amount of heat	h.	протекать (происходить) таким же образом

Ex. 4. Use the verb "to be*" in the sentence below.

1. Biology (be) the science of living things. 2. The special study of plants called botany (be) one of the two great subdivisions of the science of biology. 3. The living substance of plants and animals (be) organized into protoplasm. 4. Protoplasm (be) the basic material of all living systems. 5. The general properties of protoplasm (be) fundamentally the same in each system both in plants and animals. 6. Processes common to both plants and animals (be) respiration, digestion, assimilation, growth and reproduction. 7. They (be) both of different shapes, sizes and colours. 8. The differences between plants and animals (be) more apparent than likenesses. 9. Only three of these differences (be) important.

Ex. 5. Statements given below are false. Make them true using negative forms. Add new facts to each statement if you can.

1. Scientists know how many different kinds of plants and animals there are. 2. There is some fundamental difference between plant and animal life. 3. Plants are conscious. 4. Plants can move about. 5. This method fits all the areas from which we are going to gain

information. 6. There is protoplasm in lifeless matter. 7. Scientists know everything about the fundamental chemical and physical organization of protoplasm.

Ex. 6. Put the verbs in brackets into a proper tense form.

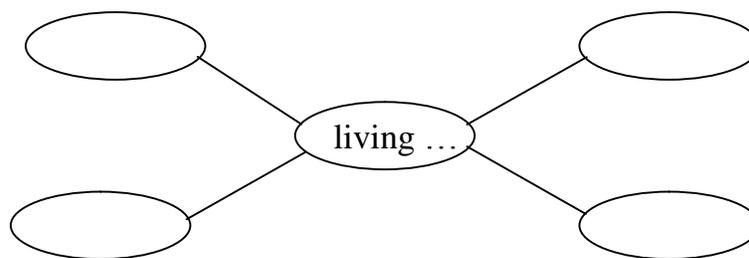
1. The word "biology" (come^{*}) from two Greek words: "bio"=life and "logos"=study. 2. Biology (include) all the facts and principles which have been derived from a scientific study of living things. 3. Life (exist) in many places on the earth. 4. In the Arctic region the temperature sometimes (fall^{*}) to degrees below zero. 5. In desert the temperature sometimes (climb) to over 120 degrees. 6. Some animals (live) under the immense pressure of the deep seas. 7. This animals (live) near the tops of the highest mountain. 8. Certain vital processes (take^{*}) place in plant bodies in the same manner as in animal bodies.

Ex. 7. Translate the following. Pay attention to the use of tenses in the "if" and "when" sentences.

1. *If* the secondary roots **outgrow** the primary ones, they **will give rise** to the fibrous root system. 2. *If* the plant **is eaten** by an animal, the plant tissues **will be digested** and carbon atom **will be absorbed** and **assimilated** into the body of animals. 3. *If* the dead body of the plant or animal **decays**, the carbon atom **will be involved** in the process of decomposition and **return** to the atmosphere in a molecule of carbon dioxide. 4. *If* the plant or animal **becomes buried** in a peat bog, the carbon atom **will become** an atom of coal in time. 5. *When* the coal **is burned**, the carbon atom **will** again **return** to the atmosphere. 6. *If* living things **have** access to this or that place and *if* they **find** the necessary conditions for their existence there, they **will invade** it. 7. *If* you **are going** to proceed to a new stage of your experiment, there **is** no time like the present. 8. *If* water **is withdrawn** from protoplasm, it **will suspend** its functions. 9. *If* water **contains** salts in such concentration that no osmosis takes place, this water **is** the most favourable **medium** for animal life. 10. *If* water **is** isotonic with protoplasm, it **will be** the most favourable medium for animal life. 11. Osmosis **doesn't take place** between the cell and its surroundings *if* both **contain** pure water.

Ex. 8. It is useful to record words which are associated in networks because it can help you to remember them. You can do this in the form of a diagram.

What do you associate the word "living" with. Fill in the spidergram.



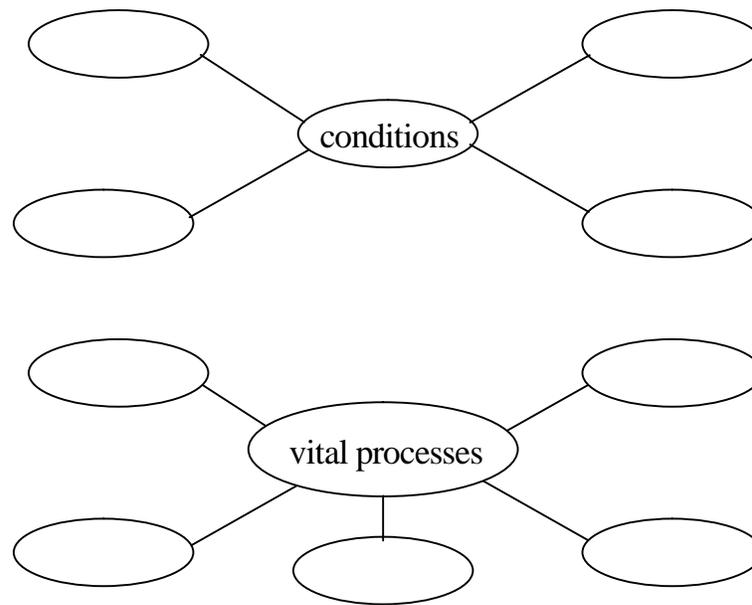
Step 2

Ex. 9. Read the text to find out the details of the conditions living organisms live in and the vital processes taking place inside them. Fill in the spidergram below.

Biology is the science of living things. The word "biology" comes from the Greek words: bio – "life" and logos – "discourse" or "study". Biology includes all the facts and principles which have been derived from a scientific study of living things. The special study of plants, called Botany, and animals, called Zoology, are the two great subdivisions of the science of biology. Plants and animals are called organisms, so biology may also be defined as the science of organisms.

Life exists in many places on the earth, often in spite of very difficult conditions. In the Arctic regions, the temperature may fall to degrees below zero, while in deserts it may climb to over 120 degrees. Some animals live under the immense pressure of the deep seas, and others live near the tops of the highest mountains. But no matter where they exist, all living things must have certain necessary conditions. Let us see what these are: living things need oxygen, living things must have the right amount of pressure, living things must have water, living things need the proper temperature, living things must have food.

Most people think that plants are not alive in the same sense that animals are, or that there is some fundamental difference between plant and animal life. But this is not so. Plants and animals have much in common. Their more important points or resemblance are: 1) the living substance of plants and animals is organized into protoplasm. Protoplasm is the basic material of all living systems and its general properties are fundamentally the same in each system both in plants and animals. 2) The living matter is organized in both plants and animals into microscopic units called cells. 3) Certain vital processes take place in plant bodies in the same manner as in animal bodies. These processes are respiration, digestion, assimilation, growth and reproduction. 4) Both plants and animals cannot live without water, air, food, light, and moderate amount of heat. They both are of different shapes, sizes and colours. In fact, the differences are not so many as the likenesses although they are more apparent, for only three are important, namely: plants are not conscious, they are unable to move about, but they make their own food.



Ex. 10. Make up five sentences with the word combinations of ex. 3.

Ex. 11. Use the Passive in the following sentences.

1. Biology includes all the facts and principles derived from a scientific study of living things. 2. Some animals endure the immense pressure of deep seas. 3. Living things require oxygen. 4. Living things require proper temperature. 5. Plants make their own food.

Ex. 12. Translate the following sentences into Russian. Follow the model.

Model: Man is an organism subject to the same laws of nature as all other higher animals.	Человек – это организм, подверженный тем же законам природы, что и все высшие животные
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1. Man is an organism subject to the same laws of nature as all other higher animals. 2. Some living things including several kinds of insects pierce our skin and feed on the blood. 3. The special study of plants called botany is one of the two great subdivisions of the science of biology. 4. The living matter in both plants and animals is organized into microscopic units called cells. 5. Processes common to both plants and animals are respiration, digestion, assimilation, growth and reproduction.

Ex. 13. Test yourself. Give the English equivalence for the following word combinations.

наука о живых существах, основной раздел, падать ниже нуля, глубокие моря, вершины гор, не имеет значения, определенные необходимые условия, нуждаться

в кислороде, уровень давления, подходящая температура, живое вещество, определенные жизненные процессы, различия и сходства.

Ex. 14. Report the following questions, beginning with "Tell me please".

1. What language does the word "biology" come from?
2. What are the two great subdivisions of the science of biology? What do they study?
3. What physical factors do living things require for their existence?
4. What extreme conditions can living things live in?
5. Is living matter organized into microscopic units called cells?
6. Why is protoplasm considered to be the basic material of all living systems?
7. What are its general properties?
8. What vital processes take place inside a cell?
9. Is there fundamental and apparent difference between plant and animal life?
10. How do plants and animals differ in appearance?
11. What do plants and animals have in common?

Ex. 15. Retell the text, using the following phrases:

to come from, in spite of, to be derived from, Arctic regions, to fall to, to climb to, to live under the pressure of (the deep seas), to live near the tops of mountains, no matter (where / what), proper temperature, in the (same) sense, fundamental difference between, to have (much, little, nothing) in common, general properties, vital processes, moderate amount of heat, to be of different shapes, sizes and colours.

Ex. 16. Discuss with your fellow students likenesses and differences of plant and animal life, mentioning facts and examples other than those used in the text.

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