Министерство образования и науки РФ

Федеральное государственное бюджетное образовательное учреждение
высшего профессионального образования
«Тверской государственный технический университет»
(ТвГТУ)

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ENVIRONMENTAL PROTECTION AND MINING ENGINEERING

Учебное пособие по развитию иноязычной (английский язык)
профессиональной компетенции для студентов 2-го курса направлений
подготовки «Природообустройство и водопользование» (280100)
и «Горное дело» (130400)

Допущено Учебно-методическим объединением вузов Российской Федерации по образованию в области горного дела в качестве учебного пособия для студентов вузов, обучающихся по специальности «Горное дело» направления подготовки «Горное дело»

Тверь 2012

УДК 802. 0: 801. 5:622 (075. 8)
ББК 81. 2. Англ:33.3 я 7

Сизова, В.В. Environmental Protection and Mining Engineering / В.В. Сизова, О.Г. Шилова. Тверь: ТвГТУ, 2012. 88 с.

Предназначено для студентов, обучающихся по направлению подготовки специалистов «Горное дело» (130400), бакалавров «Природообустройство и водопользование» (280100), а также круга людей, интересующихся вопросами в данной сфере.

Ставит целью обучить студентов читать литературу по специальности и осуществлять коммуникацию на профессиональные темы

Рецензенты: зав. кафедрой иностранных языков гуманитарных факультетов Тверского государственного университета, д. ф. н., профессор Н.А. Комина; д. т. н. ОАО ВНИИТП, профессор Санкт-Петербургского горного университета А.В. Михайлов

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Тексты на английском языке в авторской редакции
Корректор Т.С. Самборская
Технический редактор А.Н. Безрукова

Подписано в печать
Формат 60x84/16 Бумага писчая
Физ. печ. л. Усл. печ. л. Уч.-изд. л.
Тираж 100 экз. Заказ № С –

Редакционно-издательский центр
Тверского государственного технического университета
170026, Тверь, наб. Афанасия Никитина, 22

ISBN

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СТРУКТУРА ПОСОБИЯ

Пособие составлено в соответствии с программными требованиями ГОС ВПО и учебным планом по разделу дисциплины «Английский язык для специальных целей» в Тверском государственном техническом университете.

Ставит своей целью развитие навыков поискового и просмотрового чтения по данной тематике, реферирования текстов, а также накопления словарного запаса, необходимого для чтения специализированных текстов и осуществления коммуникации на профессиональные темы.

Состоит из семи разделов и построено по тематическому принципу. Охватывает следующие темы: взаимоотношение человека и окружающей среды, разработка недр, рациональное использование и охрана природных ресурсов, а также включает раздел с дополнительными текстами для самостоятельной практики перевода и глоссарий к ним.

Тематические разделы включают вокабуляр с транскрипцией, вводно-описательный текст, систему упражнений к основному тексту, дополнительные тексты на закрепление основного тематического материала с выходом в монологические высказывания «Мой родной край и город», «Известный ученый», «Моя будущая профессия», задания на закрепление ранее изученных грамматических явлений, с которыми часто приходится сталкиваться при чтении литературы по специальности. Кроме того, пособие содержит пример составления письма-запроса и резюме при оформлении на работу по специальности в зарубежную компанию и примерный план собеседования-интервью при приеме на работу.

Пособие включает задания и итоговый тест для подготовки к сдаче федерального интернет-экзамена в сфере профессионального образования

В вокабуляр включены все активные слова с транскрипцией по алфавиту. Упражнения нацелены на предтекстовую и послетекстовую подготовку. Основная цель упражнений – закрепление лексики базовых разделов и грамматического материала, пройденного на ранних этапах; развитие навыков перевода и понимания прочитанного, устной речи (диалогическая и монологическая речь), аннотирования и реферирования.

UNIT I. INTRODUCTION. PRESERVING THE ENVIRONMENT

Study the Vocabulary

preserve [prɪ'zɜ:v] *n* сохранять
urgent ['ɜ:dʒ(ə)nt] *a* крайне необходимый
concern [kən'sɜ:n] *v* интересовать
concerning [kən'sɜ:nɪŋ] *prep* относительно, в отношении
habitat ['hæbɪtæt] *n* среда обитания
for the benefit of [~'benɪfɪt ~] на благо
mutual ['mju:tʃuəl], [-tjuəl] *a* взаимный
environment [ɪn'vaɪər(ə)nmənt], [en-] *n* окружающая среда
cause [kɔ:z] *v* причинять вред
pollute [pə'lu:t] *v* загрязнять, осквернять
moisture ['mɔɪstʃə] *n* влажность
poison ['pɔɪz(ə)n] *v* отравлять
alliance [ə'laɪən(t)s] *n* союз, альянс
share [ʃeə] *v* делить, разделять
defence [dɪ'fen(t)s] *n* оборона, защита
destruction [dɪ'strʌkʃ(ə)n] *n* разрушение
threat [θret] *n* угроза
threaten ['θret(ə)n] *v* угрожать
anthropogenic [ˌæn(t)θrə(u)pə(u)'dʒenɪk] *a* антропогенный
influence ['ɪnfluən(t)s] *n* влияние, влиять
breathe [bri:ð] *v* дышать
acidrain ['æsɪd reɪn] кислотный дождь
arid ['ærɪd] *a* сухой
hydrocarbon [ˌhaɪdrəu'kɑ:b(ə)n] *n* углеводород
nitrogen ['naɪtrədʒən] *n* азот
oxide ['ɔksaɪd] *n* окись
lung [lʌŋ] *n* легкое
prematurely [ˌpremə'tjuəlɪ], ['premətʃəlɪ] *adv* преждевременно
susceptible [sə'septəbl] *a* восприимчивый
disease [dɪ'zi:z] *n* болезнь
cancer ['kæn(t)sə] *n* рак, бедствие
green house ['gri:nhaus] *n* теплица
fertile ['fɜ:taɪl] *a* плодородный
gradual ['grædjuəl], [-dʒu-] *a* постепенный
floating ['fləutɪŋ] *a* плавающий
creature ['kri:tʃə] *n* создание, творение
restore [rɪ'stɔ:] *v* восстанавливать
chemicals ['kemɪk(ə)l] *n* химикалии

Pre-text exercises
Ex.1. Mind the rules of pronunciation.
Open syllable:
[ai]: isolate, life-style, try, derive, arise, time, fiber, combine, library, alive;
[ei]: basic, capable, dangerous, behave, safe, motivation, generation, change;
[ju:]: human, opportunity, new, pursue, communicate, mutual, tube, due, use;
[əu]: social, process, probing, growth, location, ozone, enclose, focus, remote;
[i:] being, regional, complete, equal, reach, greenhouse, recent, increase, people.

Closed syllable:
[ʌ]: structure, destruction, fundamental, number, industrial, result, lung, conduct;
[i]: discipline, instance, critical, link, springs, condition, system, since;
[e]: intellectual, sense, depend, invent, fresh, setting, extent, century, welcome;
[æ]: aspect, transform, animal, planet, action, natural, balance;
[o]: common, problem, competency, context, block, long, respond, solve.

Ex. 2. Form nouns or adjectives using the suffixes and translate them:
-*er:* to transform, to organize, to devise, to teach, to work, to make, to poison;
-*or:* to excavate, to construct, to operate, to protect, to invent, to elevate;
-*ion:* to complicate, to contribute, to pollute, to destruct, to accumulate;
-*ment:* to improve, to measure, to agree, to move, to develop, to require, to invest;
-*ship:* friend, partner, member, champion, companion, author, reader;
-*ful:* hate, harm, joy, hope, help, use, wonder, beauty, sorrow;
-*less:* class, cloud, time, use, hope, help, base, health, cause, noise, reach;
-*al:* experiment, globe, form, incident, accident, environment, nature, industry.

TEXT 1. ***Ecology as a Priority***

There are a lot of problems facing people on the planet Earth nowadays. But the most urgent problem concerning the people of the whole world is an ecological one. It is closely linked to the problems of economic growth, progress in science and technology, natural resources, energy and food supplies. What is ecology? Ecology is the science that studies the conditions of the habitant of man, animals and plants for the benefit of present and future generations.

The planet Earth is our mutual home and the biosphere recognises no divisions into blocks, alliances or systems. All share the same climate system and no one is capable of building his own isolated and independent line of environmental protection. What is the environment? The environment is everything around us. It includes all living things. It also includes everything that is not alive, such as the soil, the air and water.

The pollution of the environment and destruction of ecosystems have now

reached threatening proportions. An increasing influence on nature and the application of new technological processes may cause catastrophic results.

Negative anthropogenic influences threaten to destroy nature basic cycles and the self-regenerating capacities of the biosphere. Unfortunately, millions of people on our planet live in areas in which the air is not safe to breathe. The biggest problem is ozone, formed from hydrocarbons and nitrogen oxides. Ozone can age our lungs prematurely making us more susceptible to dangerous diseases, including cancer.

This is illustrated with the following data. By comparison with the beginning of the 20th century the accumulation of carbon dioxide in the atmosphere, as well as aerosol, has increased by 20 per cent. As a result the Earth is being enclosed around with a layer of carbon dioxide like a glass cover. It may transform our blue planet into an enormous greenhouse during the next decades, with possibly catastrophic effects. Those include changes in its energy balance and gradual increase in temperature that will transform fertile regions into arid ones, raise the level of water in the oceans and produce a floating of great numbers of lands.

Air pollution can also cause a kind of water pollution called acid rain. Sulphur and nitrogen compounds mix with moisture in the air and fall to Earth in rain or snow. Then this acid water runs into rivers and lakes, seas and oceans killing every living creature.

All types of pollution (the pollution of air and the word's ocean, the destruction of ozone layer, the rise of chemicals, radioactivity, noise, etc.) are sure to influence the health of individuals, their labour productivity and require increasing capital investments in order to restore Nature suffering from man's activities.

Ex.1. Give the English equivalents from the text:

Тесно связано, продовольственное обеспечение, защита окружающей среды, разрушение экосистемы, возрастающее влияние, нарушать основные природные циклы, состариться преждевременно, увеличиться на 20%, превратить в огромный парник, превратить плодородные земли в засушливые, каждое живое существо, восстановить природу.

Ex. 2. Fill in the blanks using the active vocabulary:

mutual, to concern, to pollute, urgent, ecology, generations, habitat, environment, benefit, wastes, poisoned

The science that studies the conditions of the … of man, animals and plants for the … of the present and future … is called … .

1. Our country is rich in water resources but the problem of pure water is ….
2. The water of rivers, lakes, must not be … by slicks or released factory … .

3. The Earth is our … home.
4. People should be … about how to make our planet a healthful place for all living beings.
5. A human being is closely connected with nature, its vegetation and fauna, with towns and people and other things which surround and influence him with his …
6. When the animals eat …insects, they take in the chemicals into their cells.

Ex. 3. Read the text and answer the following questions:
1. What is the most urgent problem concerning the people of the whole world nowadays?
2. What is ecology?
3. What is the environment?
4. What may cause catastrophic results?
5. What pollutes and poisons the air?
6. How many per cent has the accumulation of carbon dioxide in the atmosphere increased?
7. What might be the effects of transforming our planet into an enormous greenhouse?
8. Why are acid rains so dangerous for people?
9. What types of pollution do you know?
10. How do they influence human beings?

TEXT 2
Read the text and give the title. Explain figures 10, 50–55 and 90.

People everywhere have become aware of a new kind of pollution. The problem has been brought into sharp focus by the discovery that many teenagers suffer permanent hearing loss following long exposures to amplified rock music, and by public concern about the effects of sonic booms that would be caused by supersonic transports (SST) if they were put into commercial service.

Noise is usually measured in decibels. A tenfold increase in the strength of a sound adds 10 units on the decibel scale, a 100-fold increase add "20". The human threshold of hearing is represented by zero decibels.

Even a brief exposure to intense noise can cause temporary loss of hearing acuity. Permanent loss of hearing follows chronic exposure to high noise levels. Noise levels as low as 50–55 decibels may delay or interfere with asleep and result in a feeling of fatigue on awakening. There has been growing evidence that noise in the 90-decibel range may cause irreversible changes in the nervous system. These forms of damage including permanent hearing loss such as that suffered by fans of rock music, can occur at noise levels well below those that are painful. Noise may be a factor in many stress-related diseases, such as peptic

ulcer and hypertension although present evidence is only circumstantial. In any case noise pollution is clearly a growing threat to our health and happiness.

Ex. 1. Translate into Russian the *noun + noun* structure:

Below zero temperature; two decade development plan; moisture defence; urgent noise limitation measures; lungs poisoning influence; mutual habitat destruction; gradual disease development; arid chemicals destruction; the Moscow World Youth Ecological Forum initiators; the Nato nuclear weapons planning working group; the world's synoptic surface weather observation; the Hiroshima-Nagasaki world Peace Conference; Defense Industry Reform; Memory storage density; Transport safety measurers; State Customs Committee; Surface-to-air missile system; information-bearing laser beam; biofuel development potential; soil and water damage resources; air quality improvement; alternative energy source; biomass extraction enterprise; National Science Foundation; the U.S. Climate Change Science Program report; region plants study; air pollution control technology; ozone layer depletion.

TEXT 3. *Man and Nature*
Part 1

1. The relations between man and nature have become one of the major problems facing civilization today. That is why ecology stands at the crossroads of politics, science and economics.

The *black spots* marking deserts, felled forests and other areas of ecological disaster are expanding at a frightening pace. Man perfects everything including his own shortcomings.

2. Our ancestors naively considered the Earth's resources to be boundless and endless. Their ecological ignorance was not their crime, but rather their woe, for it caused the death of thousands of animal species. We should not judge those who lived in the ancient, medieval or even recent times. Man has always had to fight a hostile environment. Even in the XIX century, when the word *ecology* was born, people continued to use nature as consumers. For centuries man has been proclaimed the *lord and king* of nature, and not the child.

3. Human achievements in conquering nature became so great that man's activity began to have an increasingly negative effect on the biosphere. For example, forests disappear at a rate of 20 hectares a minute. Today animals and plants perish mostly due to the production of industrial pollutants and the poisoning of the biosphere.

4. Charles Darwin once said that nature cannot lie. Today it is essential that we realize that we ourselves cannot lie to nature. We know that nature is weak and defenseless before man who has grown so strong. Our time is a witness of the beginning of *humanized nature*. Humanism is what we need most of all today –

in politics, in relations among people, and in our attitude to nature. People of different convictions must work together to wipe the ugly *black spots* off the beautiful Earth face.

(Encyclopedia Britannica)

Ex. 1. Read the text and say if the following statements:
– true
– false
– there is no information in the text

1. Ecology has direct or indirect reference to human relationship.
2. We are aware of being connected with nature but we should not become very much attached to it.
3. Man perfects everything including his own defects.
4. For centuries man has been proclaimed the child of nature, and not lord and king.
5. All types of pollution influence the health of individuals, their labour productivity and require increasing capital investments in order to restore nature.

Ex. 2. Which part of the text (1, 2, 3, 4) does the following information correspond to:
1) Our remote ancestors used the Earth's natural resources without thinking of the future generations.
2) Black spots are deserts, felled forests and other areas of ecological disaster.

Ex. 3. Choose the right response to the question: What should people do in order to wipe these ugly black spots?
– to increase capital investments;
– to perfect everything including people's own shortcomings;
– to work together.

Ex. 4. Define the main idea of the text:
– the relations between man and nature have become one of the major problems
– facing our country today;
– humanism is today what we need most of all, in relations among people and in our attitude to nature;
– black spots are expanding at a frightening pace.

Part 2

The population of the Earth is growing rapidly. The utilization of natural resources is growing accordingly. How does the environment influence Man and how does society influence Nature? Scientists study this problem. Various types

of human activity are becoming more and more independent of environmental conditions. All this does not mean that environmental factors and conditions no longer have an effect on our activities. Quite the contrary, the more independent of the environment our actions become, the more fully must we take into account its properties and conditions. Technical progress has made it imperative.

New sources of power, new processes and new materials have come into use with such a swift speed in the present century that it is hard to keep track of them all. You have only to look around your own home to get some idea of the speed of change. How many things can you find there that could not have been there in your grandfather's boyhood?

Sometimes we call the times we live in the age of steel, or the electronic age, or the atomic age, or space age, but what stands out most of all is that is an age of change. Each of us is a link in the chain of universal human progress.

Ex. 1. Answer the questions on the text.
1. How does the environment influence man and how does society influence nature?
2. Why do we call the times we live in an age of change?

Ex. 2. Match the English and Russian equivalents:

1. population	a) отслеживать
2. influence	b) принимать во внимание
3. environmental conditions	c) быстро
4. utilization	d) больше не
5. take into account	e) влиять
6. rapidly	f) использование
7. no longer	g) население
8. with a swift speed	h) стремительно
9. imperative	i) условия окружающей среды
10. keep track	J) обязательный

Ex. 3. Translate into English:

Человек постоянно находится во взаимодействии с окружающей средой (природой). Эти две системы тесно связаны между собой, и уровень развития общества определяет отношение человека к природе.

Состояние окружающей среды является важным фактором существования человеческой цивилизации, поэтому одна из важнейших задач человечества состоит в сознательном и системном регулировании использования природных ресурсов. Экологические проблемы особенно остро стоят в индустриально развитых центрах, хотя касаются они всех регионов.

TEXT 4. ***My Homeland***

Part 1. ***The Nature of Tver Region***

The Tver Region is a land of water. There are over 800 rivers and streams here. The main waterway is the Volga. There are also over 600 lakes. There are mineral waters close to Torzhok (Mitino) and Konakovo (Karacharovo). Tver itself is the Water Queen of the Volga region as it stands on the banks of five rivers: the Volga, the Tvertsa, the Tmaka, the Lazur and the Sominka.

However, the most striking natural beauty of the region is the lake with the charming name of Seliger. It is not like other lakes. It is a sort of a lake system where lakes are connected through channels. Wider and longer parts of a lake are called stretches. Besides lakes and stretches (up to 24!), Seliger forms numerous bays or bends. Elks, wild boars, bears, coon dogs, beavers, martens, hares, squirrels can be met at Seliger. There are many mushrooms and berries in the woods: raspberries, strawberries, bilberries, great bilberries, cranberries. And over 20 fish species can be found. Thousands of tourists, fans of water sports, fishermen and young activists visit the lake every year.

Another striking sight of this wonderful land is a real service-tree copse. It is situated on the island of Klichen at Seliger. It is a real natural wonder, especially in fall when service-trees bear fruit. So, there is something to see in the Tver region, especially as it is situated in the part of the Russian Plain where elevations and lowlands alternate. There are some hills to the north-west which reach 1,000 feet in height. The nature gives a lot of inspiration here. That is where artist I.I. Shishkin painted his famous canvases Ship Forrest, Morning in a Pine Forrest.

Tver land is rich in peat, woods, sandstone, gravel, etc. Tver peat reserves are estimated at 2 billion tons. That is why the development of the peat industry in the region is in focus today. The success of the peat industry revival depends not only on improving the environmental condition in the region, it also helps to find a solution to the problems of employment, energy development, engineering and other related industries expansion.

Part 2. ***Tver***

The town of Tver stands on the great Russian River Volga, namely at the confluence of the Volga and Tvertsa rivers. The town was known as Kalinin from 1931 to 1990. It is one of the oldest Russian towns. Tver was founded in 1135. Tver, which is north of Moscow, was formerly the capital of a powerful medieval state and a model provincial town in Imperial Russia. It played a great role in the early history of our country.

In the XVIII century Catherine the Great sent a group of architects headed by

P.R. Nikitin to restore the town after two great fires. The best architects of Russia A.V. Kvasov and M.F. Kasakov worked up the town development plan. The town planning was considered to be a height of a three-rayed architectural composition. It has been preserved to our days. Many beautiful buildings designed by them are examples of Russian architecture. These buildings are: the Travel Palace, a number of buildings in Octagonal Square and on the bank of the Volga River.

Many famous Russian poets and writers came to Tver many times. Some of them lived or stayed here for a long time: Pushkin, Krylov, Saltykov-Shchedrin, Tolstoy, Lazhechnikov. Monuments to all these people were erected in our town. On the left bank of the Volga river we can also see the monument to the Tver merchant Afanasy Nikitin who was the first to visit India.

In the second part of the 19th century Tver became a large industrial town. Here appeared large textile mills, a steam mill, a timber mill and a railway carriage building plant. Now Tver is a big industrial and administrative center of Tver Region. There are many large enterprises of engineering, metal working, textile, chemical, polygraphic and other industries: a printing combine which publishes text-books and magazines, a larger combine of children books, an excavator works, an artificial fibre combine and an artificial leather combine.

The Volga plays an important role in the life of our town; it supports suburban and long distance passenger-boats and serves as means of transport for various goods.

The population of Tver is about 410 000.

Tver is also a big cultural centre of our country. Its Drama Theatre, Philharmonic Society, Children's Theatre were built after the war. Tver has many cinemas, clubs, palaces of culture, a television centre and many libraries. The Gorky Regional Library was founded one hundred and fifty years ago (1860). It has over 600,000 books. Now it is a center of scientific research.

There are many educational establishments in our town. Among them are State University, Technical University, State Medical Academy and Agricultural Academy.

The country around Tver is very picturesque. The town of Tver grows and becomes more beautiful from year to year. Its old history, advantageous geographical location between the two Russian capitals, rich nature, developed industry, intellectual, scientific and cultural potential are sure to attract tourists to the Tver Region.

Ex. 1. Read the words with right pronunciation and stress:
Beauty, inspiration, confluence, provincial, medieval architect, architecture,

Octagonal Square, monument, large textile mills, railway carriage building plant, enterprise, printing and publishing combine, artificial fibre and leather combines, industry, scientific, Drama Theatre, Philharmonic Society, many stadiums, picturesque, to surround, tourist.

Ex. 2. Answer the questions on the text:
1. Why is the Tver Region called a land of water?
2. What is the Seliger famous for?
3. Where does the town of Tver stand?
4. When was Tver founded?
5. Is Tver older than Moscow?
6. What role did Tver play in the history of our country in the past? And now?
7. By whom was the centre of the city designed?
8. What buildings were built by these architects?
9. What famous people lived and worked in Tver? And what about our contemporaries?
10. What large Tver enterprises do you know?
11. What is the largest library in Tver and what is it famous for?
12. How many higher schools are there in Tver?
13. Why is our town so attractive for tourists?

Ex. 3. Make up a story of the town of Tver.

Ex. 4. Complete the dialogues.

1) – ……?

– My home town is Tver.

– ……?

– Yes, I was born in Tver and I have lived here all my life.

2) – ……?

– My town was founded in the twelfth century.

– What part of the town do you like most of all?

– …….?

– What are the main tourist attractions in your town?

– In my opinion,…….

3) – Are there any green spaces in your town?

– …….

– ……...?

– Some people prefer to live in the center of the town, others – in the suburbs where life is quieter and there is more space.

– …….?

– My favourite place in my town is Ulitsa Tryokhsvyatskaya.

4) – …….?

– I cannot say that public transport is good in our town, at least not everywhere. Buses are often overcrowded, especially in rush hours, and the traffic becomes more intensive from year to year. But as far as I can judge there is the same problem in every big city.

– …….?

– Usually by bus? But sometimes I get to the University by fixed-route taxi.

– …….?

– Yes, of course. I feel happy in my town. I'd like to live there all my life.

Ex. 5. Make up your own dialogue.

GrammarRevision
(видовременные формы глагола, типы вопросов, модальные глаголы и их заменители)

1. Translate, paying attention to the tense-forms:
1. The Sun attracts and is attracted by the planets. 2. Matter is constantly changing and is constantly moving. 3. Nuclear energy is derived and will be derived from the nuclear reactors. 4. In principle Man is capable of making everything that Nature has already created or is creating now. 5. Since the early fifties extensive research and development programs have been carried out in many countries, much progress has been achieved and the basic technical problems have been built and operated. 6. During recent years interest in nuclear power has been steadily growing in several countries. 7. Newton's laws of motion are referred to. 8. These terms are being insisted upon. 9. The achievements in this field will be spoken about at the conference.

2. Put the verb in a proper tense:
1. Einstein (to present) his theory of relativity in 1905. 2. Our country (to have) a great number of brilliant scientists in all fields of science. 3. We are tired. We (to walk) 10 kilometers already. 4. He already (to park) the car by the time I arrived. 5. I (to work) at the library tomorrow from 5 to 6. 6. He (to watch TV) when the phone rang. 6. In few days we (to go) to London. 7. I (to write) this exercise for about 10 minutes already. 8. When he was 12, he (to begin) his study of social sciences. 9. I just (to meet) him. He (to look) nice. 10. Russian

scientists (to make) research in all fields of knowledge. 11. Someone (to knock) at the door, Ann, go and open it. 12. He (to write) a paper before he went to the scientific meeting. 13. I (to know) the results in a week. 14. Don't ring her up about 9 o'clock tomorrow, she (to put) her children to bed.

3. Change Active into Passive:

1. All the scientists of the world accepted the theory.
2. We haven't known the reason for the sun's radiation.
3. The scientist had performed several experiments to prove his theory.
4. He hasn't recognised our work first.
5. We study the problems first then solve them.
6. They don't require different kinds of material for the experiments.
7. The rays are striking the surface.
8. We were working out the new design of our laboratory at that time.
9. That scientist has not convinced us of his ideas. The wind had changed its direction by the last night.
10. They were applying the results of the experiment to practice.

4. Ask questions using the words in the brackets:

1. The new lab has just been opened (where).
2. He has been operating the machine (how long).
3. I have found this procedure very helpful (who).
4. They are going to introduce the new system (when).
5. The student gave an example of the three states of matter (why).
6. The sun's rays will have struck the surface by early morning (what).
7. They have shown the direction of the rays in the diagram (who).
8. Large deposits of coal were discovered in our country last year (when).

5. Translate sentences, paying attention to modal verbs and their substitutes:

1. Today a student has to assimilate a great amount of new information. 2. The students are to present their course-papers once or twice a semester. 3. The firm has developed a robot that can move over territory with a garbage collection bucket. 4. Science and technology should find some more radical solutions to the problem of ecodevelopment. 5. The population of the Earth is growing rapidly and by 2020 it may exceed the seven billion mark. 6. The achievements of science must be used to better people's living conditions. 7. The tourists may attend a forestry reserve. 8. He was not allowed using dictionary while writing the test. 9. I think I'll be able to get round to this job only next month. 10. Law ought to prohibit the actions hurtful to Society Health. 11. It, certainly, is a fine thing to be able to orate. 12. I couldn't get a day off because I was to write a report for Environmental Conference.

UNIT II. ATMOSPHERE PROTECTION

PART 1.

Study the Vocabulary

envelop [ɪn'veləp], [en-] *v* окутывать, окружать
harmful ['hɑ:mf(ə)l], [-ful] *a* вредный, пагубный
influence ['ɪnfluən(t)s] *n* влияние
originate [ə'rɪʤ(ə)neɪt] *v* происходить
altitude ['æltɪt(j)u:d] *n* высота
determine [dɪ'tɜ:mɪn] *v* определять
reach [ri:ʧ] *v* достигать
contain [kən'teɪn] *v* содержать
observe [əb'zɜ:v] *v* наблюдать, соблюдать
stratum (strata-мн.ч.) ['strɑ:təm] *n* слой
vary ['veərɪ] *v* меняться
height [haɪt] *n* высота
vapour [‘veipə] *n* пар, туман
absorb [əb'zɔ:b] *v* поглощать
disperse [dɪ'spɜ:s] *v* рассеиваться
dense [den(t)s] *n* плотность
amount [ə'maunt] *n* количество
admixture [əd'mɪkstʃə] *n* примесь
cause [kɔ:z] *n* причина
reason ['ri:z(ə)n] *n* причина, повод
artificial [ˌɑ:tɪ'fɪʃ(ə)l] *a* искусственный
occur [ə'kɜ:] *v* случаться, происходить
erupt [ɪ'rʌpt] *v* извергать (ся)
fungispores ['fʌŋgaɪ, -gi:, 'fʌnʤaɪ, -ʤi: spɔ:] *n* споры грибков
pollen ['pɔlən] *n* пыльца
enterprise ['entəpraɪz] *n* пром. предприятие
refinery [rɪ'faɪn(ə)rɪ] *n* очистительный завод
emit [ɪ'mɪt], [i:-] *v* испускать, выделять
sulphurous ['sʌlf(ə)rəs], [-fjɔ:-] *a* серный
yield [ji:ld] *v* производить, приносить
soot [sut] *n* сажа, копоть
convenient [kən'vi:nɪənt] *a* удобный
estimate ['estɪmeɪt] *v* оценивать, подсчитывать
adult ['ædʌlt], [ə'dʌlt] *n* взрослый человек
stockpile ['stɔkpaɪl] *v* накапливать
distinguish [dɪ'stɪŋgwɪʃ] *v* различать, отличать

stormdrain [stɔ:m dreɪn] *n* водосток
litter ['lɪtə] *n* мусор
depletion [dɪ'pli:ʃ(ə)n] *n* истощение, уменьшение
desertification [ˌdezətɪfɪ'keɪʃ(ə)n] *n* опустынивание
deforestation [ˌdezətɪfɪ'keɪʃ(ə)n] *n* обезлесение, вырубка леса
precipitation [prɪˌsɪpɪ'teɪʃ(ə)n] *n* осадки

Pre-text exercises:
Ex. 1. Mind the rules of pronunciation.
[gz]: exam, exist, example, exert, exalt, exhibition, exact, exude, exhaust;
[ks]: toxic, explosion, mix, next, extra, complex, expect, explain, exceed, excellent, extremely;
[ʧ]: inch, branch, launch, chamber, change, chain, attach, research, reach, choose;
[ʧə]: lecture, picture, nature, fracture, temperature, mixture, feature, departure;
[ʃ]: ensure, pressure, distinguish, assure, artificial, machine, initial, emission, fresh, shoot;
[ʒ]: measure, closure, pleasure, treasure, leisure, erasure;
[ʤ]: nitrogen, hydrogen, oxygen, jibe, jail, subject, jest, jag, jug, Japan, January;
[f]: phase, photo, phone, cipher, sphere, atmosphere, troposphere, alphabet;
[kw]: square, equal, liquid, quick, quite, quantum, quarter, quantity, quality.

Ex. 2. Form nouns or adjectives using the suffixes and translate them.
-*er:* to begin, to fight, to import, to produce, to mock, to lead, to research;
-*ment:* to advance, to develop, to equip, to punish, to move, to improve;
-*ion:* to pollute, to allocate, to concentrate, to extract, to accommodate;
-*ism:* capital, hero, race, national, race, volcano, gangster, Darwin, alcohol;
-*(i)ty:* active, major, similar, productive, local, royal, labile, tranquil, proper;
-*able:* comfort, peace, honour, suit, value, accept, drink, adapt, pass;
-*ic:* economy, geography, history, period, Islam, tactic, sulphur, ferro, atom;
-*ous:* vapour, continue, gas, poison, danger, right, hazard, sulphur.

TEXT 1. ***Structure and Gas Composition of Atmosphere***

Atmosphere is not just the air breathed by people, animals and plants. It is also a gaseous substance enveloping the earth, protecting it from abrupt changes in temperature (without the atmosphere, daily variations in the temperature on the planet would reach 200^0C) and protecting all living things from harmful solar and cosmic radiation. The direct and indirect influences of the atmosphere on man are varied.

The atmosphere consists of the following basic strata.

The troposphere reaches to a height of 8 to 17 kilometres. It contains 80% of the atmospheric mass and water vapour, the weather phenomena develop in it.

The stratosphere is the layer above the troposphere and reaches to an altitude of about 40 kilometres. The greatest concentration to ozone (O_3) is observed in the stratosphere's upper level. The ozone absorbs most of the ultraviolet radiation and protects life from its harmful effect.

The ionosphere is the layer above the stratosphere containing highly ionised gas molecules. This layer protects the biosphere from the harmful effects of cosmic radiation and influences the reflection and absorption of radio waves; the northern lights originate here.

The exosphere is located above the ionosphere and is also known as the dispersal sphere, because the gas molecules of this layer are dispersed into outer space.

It is impossible to exactly determine the upper limit of the earth's atmosphere. The higher the altitude the less the dense of the air is. Up to 250 kilometres, the atmosphere is composed of the following gases: nitrogen, oxygen, argon, carbon dioxide, as well as small quantities of neon, helium, krypton, xenon, hydrogen and ozone. According to space research, the principal component of the atmosphere at a height of 250 to 300 kilometres is oxygen. Even higher, beginning at a height of 500 to 600 kilometres, the atmosphere becomes a mixture of helium and hydrogen, and its very outer layer consists of atomic hydrogen. Besides gases, the atmosphere always contains a certain amount of water vapours and admixtures.

Ex. 1. Give English equivalents of the words and word combination from the text:

Воздух, которым дышат; окутывающий землю; необратимые изменения; прямое и косвенное влияние; водный пар; верхний слой; вредный эффект; северное сияние; открытый космос; чем выше, тем меньше; также как и небольшое количество неона; согласно космическим исследованиям; определённое количество; различные примеси.

Ex. 2. Answer the questions:

1. What is the atmosphere?
2. What does the gaseous substance enveloping the earth protect it from?
3. What does the troposphere consist of?
4. Where is the greatest concentration of ozone observed?
5. Where does the weather develop?
6. What layer do the northern lights originate in?
7. Why do we call exosphere the dispersal one?
8. How does the air density change?
9. At what height does the atmosphere become a mixture of helium and hydrogen?
10. Name all chemical components of every basic stratum.

Remember!

A cause is that which produces an effect, which makes a thing happen (cause of, not for something). *A reason* is fact which is put forward as a motive or explanation, or in order to justify some conclusion.

Ex. 3. Fill in the blanks with "cause" or "reason":
1. Carelessness is often the … of fires. 2. He didn't tell anyone his … for leaving. 3. The … of the accident is still not known. 4. What is the … of lightning? 5. Scientists attribute changes in the weather to natural … . 6. There is no … to suppose he will forget. 7. The … of earthquakes is the heat inside the earth. 8. What was the … for your refusal to go there? 9. Never stay away from the lessons without good …. 10. The police wanted to know the … of the accident. 11. The …..why chief engineer did it is a mystery.

Ex. 4. Complete the dialogue between the correspondent of *the Argumenty & Facty* and the student of our university:

Correspondent: Are you concerned about the wasteful use of resources?

Student: ……..

C.: ……?

S.: Yes, we have air pollution problems in our town.

C.: What is the main cause of bad air quality in your town?

S.: …….

C.: What industries are there near where you live?

S.: …….

C.:…….?

S.: Yes, they pollute much.

C.: It's a pity, of course.

Grammar Revision

(видовременные формы глагола, согласование времен, местоимения *no, nothing, some, something, any, anything*, формы и функции инфинитива)

1. a) Translate, paying attention to the tense forms:
1. We have recently seen some works by William Blake, an English poet, painter and printer, who lived in the 18th century. 2. When he was young the French Revolution took place and he supported it. In England a different sort of change was taking place at that time. We think we'll read about these events in

his works. 3. English is spoken by over a billion people around the world, in other words, by more than a quarter of the world's population. 4. It is spoken as a mother tongue in the UK, in former colonies such as Australia and New Zealand, and of course, by the vast majority of the North American population. 5. So English may be really considered to be an international language! 6. Has the report been prepared? – No, it hasn't. It is still being prepared. 7. The ship turned just in time, but it had still been damaged by iceberg. 8. The New Zealand earthquake will be followed by tremors lasting an hour.

b) Put the verbs in a proper tense, paying attention to Sequence of Tenses:
1. For millennia people believed that some day all people (to be) equal and free, that no one ever (to suffer). 2. People thought that many years ago there (to be) neither rich, nor poor. 3. The ecologists from different countries considered that global warming (to produce) far more profound climate changes than simply a rise in global temperature. 4. In the latest research it was proved that ultraviolet radiation from the sun (to cause) skin cancer. 5. He thought that this (to enable) large-scale industry to develop on a scientific basis in future.

2. Choose the right pronoun (no, nothing, some, something, any, anything):
1. (No, some) part of England is particularly mountainous. 2. The United Kingdom has (any, no) written constitution or Bill of Rights. 3. People of Britain are free to do (something, anything) not forbidden by law. 4. At times it was strictly forbidden in Britain to study (any, anything) of the languages of the minorities. 5. Today (some, something) of the country's ethnic minorities have their own languages. 6. Man's biology has given him (some, any) great advantages over other animals, he is capable of speech – a gift which (some, no) other animal possesses. 7. There is (nothing, anything) inside man that tells him how to go hunting or fishing or shopping in a super-market to get his food. 8. Scientists today believe that race has (anything, nothing) to do with intelligence or with amount of progress of a society. 9. There was (anything, something) annoying in her voice. 10. It may take much time for (no, some) waste dumps to become "acid neutral".

Infinitive

Правило перевода:

1. Инфинитив как определение**.**

Модель а) существительное + инфинитив

Перевод: придаточное предложение с союзом «который» в будущем времени и с оттенком долженствования.

The plans to be reconsidered are in the top drawer. – Планы, которые должны быть пересмотрены, лежат в верхнем ящике.

Модель в) после слов the first, the second, the last и т.д. инфинитив

переводится глаголом в личной форме.

He was the first to receive the results. – Он первым получил результаты.

2. Инфинитив в роли обстоятельства цели или следствия**.** Часто в самом начале или в самом конце предложения.

Перевод: придаточное предложение с союзом «чтобы», «для того чтобы».

To discuss ecology issues numerous conferences have been held by environmental agencies. – Чтобы обсудить вопросы экологии, организации по защите окружающей среды провели многочисленные конференции.

3. Translate, paying attention to the infinitive form and function:

1. She is very communicative, but she does not like to speak in public. 2. Man's ability to speak and develop language allows him to share knowledge with other men. 3. There are many things to be said in favor of, and a few against, the proposal to take the population census every 5 years. 4. Man is the only animal that uses one tool to make another. 5. The lectures to be delivered will be dedicated to the Forestry Protection. 6. Hypotheses are to be tested by all means. 7. The discovery made and the data obtained were the first to be published in the Science News. 8. His old teacher was the first person to spot his unusual talent. 9. The research to be carried out now is of great importance. 10. To have a good memory is a great advantage. 11. Ecologists were the first to find man and animal behavior dependence. 12. The problem to be discussed at the conference is of great importance. 13. To understand this method one must know something about its specific principles. 14. The first industrial revolution gave us machines to do the work that had been done before by man's hands. 15. There are difficult problems to be tackled by mankind. 16. To say that a society is civilized doesn't mean that it has a culture. 17. To increase the battle against air pollution some countries are making tougher laws on preserving environment. 18. To prevent storm drain pollution one should place litter in proper trash receptacles (ящик), never on streets. 19. The ozone layer to protect the Earth from the dangerous light of the Sun is being destroyed. 20. The sulfates to be mixed with clouds cause acid rain. 21. If you have pets you should use a “pooper scooper” (совок) and dispose of (ликвидировать) pet waste in the toilet to avoid human infection and gastric illness. 22. Mendeleyev was the first to arrange chemical elements in a Periodic Table. 23. Our students were the last to come into the lab.

TEXT 2. ***Sources of Atmospheric Pollution***

Scientists distinguish between natural and artificial sources of atmospheric pollution. Natural pollution of atmosphere occurs when volcanoes erupt, dust storms take place, forest fires occur as a result of lightning, and sea salt is washed ashore. The atmosphere always contains aeroplankton (bacteria,

including those causing disease), fungi spores, plant pollen, etc.

Artificial pollution of the atmosphere is characteristic mostly of cities and industrial enterprises, automobiles and heating system which pollute the atmosphere and negatively influence the local climate. It has been established that air pollution in urban areas grows in proportion to the population.

For a long time the problem of air pollution in the cities was chiefly connected with coal-burning in heating system which emitted smoke, ashes and sulphurous gas. Today industrial enterprises and automobiles are the primary sources of atmospheric pollution.

Industry pollutes the atmosphere by emissions of harmful gases, industrial dust and toxic, poisonous substances. Thermal electric plants, metallurgical and chemical factories, oil refineries are sources of air pollution. Large amounts of dust are emitted into the atmosphere by thermal electric plants and electric power plants using low-grade coals that yield large quantities of soot and sulphur-containing compounds.

The automobile is a convenient means of transport, but it has a negative influence on the environment. It is estimated that one car burns up the amount of fresh air needed for 100 adults to breathe. At the same time, it emits the same amount of fumes into the atmosphere.

Research carried out in our country has shown that automobile exhaust gases are a complicated mixture of many toxic components. City air is polluted not only by exhaust fumes but also by the products of their oxidisation, often more toxic than the initial substance. One of them is ozone which is useful in small quantities, but is deadly poisonous in large concentrations.

The problem of radioactive pollution of the atmosphere arose in XX century when atomic bombs had been dropped on the Japanese cities of Hiroshima and Nagasaki. After exploding an atom bomb, an extremely high level of radiation covers an enormous area for a long period of time as the radioactive particles are dispersed. From the atmosphere, the radioactive products fall on the earth, polluting the soil, water bodies and living organisms. Radioactive elements (isotopes) formed during the explosion are taken in by the human body in different ways and have different effects.

Ex. 1. Give the English equivalents:

Искусственное загрязнение, естественное загрязнение, споры грибков, промышленное предприятие, нагревательные системы, оказывать влияние на климат, городское население, первостепенный источник, промышленная пыль, заводы по переработке нефти, сложная смесь химических соединений, первоначальное вещество, ядовитый газ, атомное оружие, огромная территория, радиоактивные частицы, загрязнение почвы, живые организмы, взрыв атомной бомбы, в больших количествах.

Ex. 2. Match the pairs of the following word-combination:

1. Raw materials	1. Выхлопные газы
2. Thermal electric plants	2. Сырьё
3. Low-grade coal	3. Теплоэлектростанции
4. Sulphur-containing compounds	4. Удобный вид транспорта
5. Convenient means of transport	5. Соединения, содержащие серу
6. Exhaust gases /fumes	6. Низкосортный уголь

Ex. 3. Answer the questions:

1. What kinds of atmospheric pollution do you know?
2. What is natural pollution?
3. What is artificial pollution?
4. What is the problem of air pollution connected with?
5. What is the main source of atmospheric pollution?
6. How does industry pollute the atmosphere?
7. How does transport influence the environment?
8. What consequences caused by radioactive pollution can be?

Ex. 4. Read the interview between environmentalist and the students of your Department. Play it out.

Student: What are the main environmental problems connected with atmospheric pollution?

Environmentalist: Speaking of atmospheric pollution we can consider such ecological problems as the greenhouse effect, global warming, ozone layer depletion, deforestation and acid rains. It goes without saying they are interconnected.

S.: What is the greenhouse effect caused by?

E.: The greenhouse effect is a process which heats the earth because greenhouse gases absorb outgoing radioactive energy and re-emit some of it back towards the earth, as a result it leads to the higher temperatures and global warming. Fossil fuel burning and other human activity such as cement production and tropical deforestation result in increasing atmospheric carbon dioxide level.

S.: What is the danger of global warming?

E.: Global warming, a recent warming of the Earth's surface and lower atmosphere is the result of a strengthening of the greenhouse effect and can lead to the climate changes.

S.: What makes holes in the ozone layer? Why are holes in the ozone layer dangerous for animals and humans?

E.: The ozone layer hole is not the hole in physical meaning. It means the ozone layer depletion, caused by industrial pollutants and other harmful chemicals

from human activity. Ozone is a protective layer from the sun radiation in the upper atmosphere. The holes in the ozone layer let dangerous UV rays in from the sun.

S.: What are the effects of deforestation?

E.: Deforestation, the removal of trees without sufficient reforestation can result in damage to habitat, biodiversity loss and aridity. Deforestation causes extinction, changes to climatic conditions, desertification, and displacement of populations.

S.: What do you know about acid rains?

E.: Acid rain is a rain or any other form of precipitation that is unusually acidic, meaning that it possesses elevated levels of hydrogen ions (low pH). Acid rain is caused by emissions of carbon dioxide, sulphur dioxide and nitrogen oxide which react with the water molecules in the atmosphere to produce acids. It can have harmful effects on plants, aquatic animals, and infrastructure.

S.: Thank you very much.

E.: You are welcome. I am always ready to answer your questions.

TEXT 3. ***The Problem of Air Pollution***

1. Air pollution is a chemical, physical, or biological agent that modifies the natural characteristics of the atmosphere. The atmosphere is a complex, dynamic natural gaseous system that is essential to support life on planet Earth. Stratospheric ozone depletion due to air pollution has long been recognized as a threat to human health as well as to the Earth's ecosystems. Worldwide air pollution is responsible for large numbers of deaths and cases of respiratory disease. While major stationary sources are often identified with air pollution, the greatest source of emissions is actually made up by mobile sources, mainly the automobiles.

2. The World Health Organization thinks that 4.6 million people die each year from causes directly attributable to air pollution. The health effects can result in increased medication use, increased doctor or emergency room visits, more hospital admissions and premature death. The human health effects of poor air quality are far reaching, but principally affect the body's respiratory system and cardiovascular system. Individual reactions to air pollutants depend on the type of pollutant a person is exposed to, the degree of exposure, the individual's health status and genetics. People who exercise outdoors, for example, on hot, smoggy days increase their exposure to pollutants in the air.

3. There are many air pollution control technologies and urban planning strategies available to reduce air pollution. However, worldwide costs are

a small fraction of the economic damage that air pollution inflicts on every nation of Earth.

4. Many countries are debating how to reduce dependence on fossil fuels for energy production and shift toward renewable energy technologies or nuclear power plants. Efforts to reduce pollution from mobile sources include primary regulation, expanding regulation to new sources, increase fuel efficiency, conversion to cleaner fuels, or conversion to electric vehicles with renewable energy sources.

(From Wikipedia)

Ex. 1. Read the text and say if the following statements:
– true
– false
– there is no information in the text

1. It is estimated that millions of deaths each year are caused by air pollution.
2. Ozone depletion is one of the outcomes of air pollution.
3. To decrease their exposure to pollutants in the air people should exercise outdoors on hot, smoggy days.
4. Industrial development could impact certain species by air pollution.

Ex. 2. Which part of the text (1, 2, 3, 4) does the following information correspond to:
1. Air pollution causes different health problems and early deaths.
2. Many countries undertake efforts to enhance the usage of non-polluting energy sources.

Ex. 3. Choose the right response to the question: What sources are considered to be major air pollutant?
– they are hydro-electric stations;
– they are electro mobiles;
– they are nuclear power plants;
– they are cars and buses.

Ex. 4. Define the main idea of the text:
– air pollution modifies the atmosphere on our planet;
– air pollution control technologies are very costly;
– air pollution damages life on the Earth;
– air pollution from mobile sources reduction is currently discussed in many countries.

Grammar Revision

(видовременные формы глагола; местоимения *it, one*; инфинитивные обороты Complex Object и Complex Subject, конструкция Modal Verb + Perfect Infinitive)

1. Open the brackets using the verbs in appropriate tense, voice and form:

1. Life (to exist) on Earth for millions of years. 2. We do not know in what form life first (to exist). 3. I already (to compare) the data on the first and second respondent groups. 4. Considerable efforts (to make) now to solve ecological problems. 5. In the nearest future ecological factors (to include) in the indicators of an enterprise's performance. 6. In ancient times science (to treat) simply as a system of statements. 7. Education is the means by which the young (to teach) the ways to cope with the problems of living. 8. Education (to begin) with birth and (to continue) until death, but it is most important in childhood. 9. The biochemical parameters of the biofuel study just (to record and test).

2. Translate sentences, paying attention to the words it, one:

1. The City of London had walls all round it at one time. 2. It is hard to believe that long ago even the King had to knock at the city gate and wait till the Lord Mayor gave him permission to enter. 3. It is at night that the West End of London is most gay, especially near Piccadilly. 4. Rural settlements of Great Britain differ from the traditional ones in other countries, they resemble their suburbs. 5. One should note that the number of millionaires in Great Britain has increased ten times. 6. The most attractive feature of any science is that it enables us to shape the world. 7. It is impossible to ban new ideas or to stop progress in science and technology; this is an objective law of development of any society. 8. It is television that has been called man's "third eye". 9. The biological differences among the living races of people are trifling ones. 10. No one knows how many people can be supported by the Earth.

Complex Object

Объектный инфинитивный оборот

П + СК + Д + inf = complex object,

где Д – существительное или местоимение в объектном падеже.

Переводится придаточным предложением, вводимым союзами «что», «чтобы», «как».

«Вводящие» глаголы-сказуемые:

To want, to wish, should like, to hate, to prefer, to expect, to consider, to think, to suppose, to know, to believe, to order, to allow.

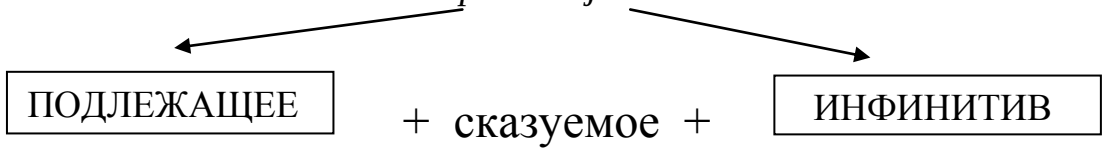
We expect purification plants to protect the air from pollution.

Мы полагаем, что очистительные заводы защищают воздух от загрязнения.

To see, to hear, to watch, to notice, to observe, to feet, to make, to let – после этих глаголов частица “to” перед инфинитивом не ставится.
I watched them plant trees. Я наблюдал, как они сажают деревья.

1. Translate the following sentences, paying attention to the objective infinitive construction:
1. We try to make our children live in a better and healthier world. 2. In the 19th century people using nature as consumers believed Man to be “lord and king” of nature and not the child. 3. Everyone noticed the climate change. 4. Economists expected the environment to be capable of absorbing all the rubbish of economy. 5. We heard them start recycling projects. 6. Many electric companies suppose saving energy to be better than making more energy. 7. Our ancestors considered the Earth’s resources to be boundless and endless. 8. Everybody knows the environmental problem to be caused by economic activities. 9. Ecological disaster will make us use the environment carefully. 10. Some experts think pollution to be damaging the resources. 11. Analysts of the Russian Research Center maintain the proportion of the middle class to have reached 10 percent. 12. It is known the first hospice to have been organized with the assistance of philanthropists. 13. I don’t bear the children to be treated badly. 14. They would like the public opinion poll to be carried out as soon as possible.

Субъектный инфинитивный оборот
Complex Subject



Переводится предложением с вводными словами или неопределённо-личным предложением.

Сказуемое может быть выражено:

глаголами в пассивном залоге:	глаголами в активном залоге:	словосочетаниями:
be said – говорят	seem – казаться	be likely – очевидно, вероятно
be known – известно	appear – оказываться (по-видимому)	be unlikely – маловероятно
be seen – видели, видно	prove – доказывать, оказываться	be sure – безусловно, конечно
be reported – сообщают	turn out – оказываться	be unsure – неуверенно, неопределённо

be expected – ожидается/ полагают be supposed – полагают/предполагают be considered – считают, полагают be believed – считают, полагают be found – обнаружено be thought – считается Пример: Life on the Earth is known to be impossible without ozone. Известно, что жизнь на Земле невозможна без озона.	chance – случаться happen – случаться, оказываться Пример: Environmental pollution proved to be significant obstacle to economic growth. Загрязнение окружающей среды оказалось значительным препятствием для экономического роста.	be certain – конечно, несомненно be uncertain – сомнительно Cars are certain to cause air pollution. Машины, несомненно, вызывают загрязнение воздуха.

1. *Translate the following sentences, paying attention to the subjective construction:*

1. The construction of another purification plant was reported to have been launched recently. 2. Flame and catalytic neutralisers appeared to be the best of all the devices proposed. 3. Environmental protection measures are said to have become a part of basic industrial plans. 4. In the combustion of any fuel the released gases are certain to contain sulphur and nitrogen oxides. 5. The north-western regions of our country, Norway and Sweden are known to get the biggest share of acid rains. 6. A monthly average of almost 100,000 tonnes of sulphur proved to be carried across the Russian western border. 7. Emission rate limits are supposed to be set for each industrial enterprise. 8. Such project of factories and power stations is unlikely to be endorsed. 9. Environmental protection is expected to be a universal concern. 10. Natural riches seemed to be unlimited. 11. The by-products of enterprise activity are sure to pollute air, water and land. 12. He is likely to have made a full review of the article. 13. He proves to be a leading scientist in this field of biology. 14. The experiments are reported to have been over successfully. 15. The conference is supposed to be held at the end of June. 16. The translation of the article is certain to be published next month. 17. Many foreign delegates appeared to know Russian. 18. All the groups happen to be divided into primary and secondary. 19. His interest is certain to have increased in this joint venture. 20. Everybody is sure to know at least one foreign language. 21. Our knowledge of the world is believed to be limited in time and space.

Modal Verbs
(may/might, must, can/could, should, ought to, need not)
+ Perfect Infinitive (have + v_3)

Переводятся:

1. May – вводным словом «возможно», всё остальное предложение – в прошедшем времени. – You may have seen this article in the book I gave you. – Возможно, ты видел эту статью в книге, которую я дал тебе.
2. Must – вводным словом «должно быть», всё остальное предложение в прошедшем времени. – He must have left. –Он, должно быть, ушел.
3. Should, ought to –«следовало бы», could, might – «могли бы», переводятся также предложением в прошедшем времени, но с оттенком упрёка и частицей «бы». – You should have taken the text-book in the library. – Вам следовало бы взять учебник в библиотеке (сожаление, упрёк в том, что не сделано).
4. Need (not) – «не нужно/не надо было, можно было и не». – You need not have come. – Не нужно было приходить (а вы пришли). Указывает на то, что совершено ненужное действие.

2. Translate into Russian:

1. They must have attended his lecture. 2. They may have obtained the necessary data. 3. A certain way out of the situation must have been found. 4. He could have changed his opinion on the subject. 5. He is not to be found anywhere. He must have left. 6. I needn't have taken so many things. It was very hard to carry them. 7. It must have been the way out. 8. I don't think it could have been the man you saw. 9. I'm sorry. I ought to have asked you to phone me. 10. Actually she could not remember it, but she knew at once that she must have experienced it some time. 11. It should have been noted that the emotional reactions had varied in intensity and duration. 12. One needn't have guessed that his experiment was close to the task. 13. Practically any non-language task could be adapted to the scientific study of motor learning, provided the performance of the subject could be accurately measured and recorded. 14. These problems needn't have been investigated unless the investigators had had an adequate apparatus at their disposal. 15. Could the performance have been improved? 16. They ought to have analyzed this phenomenon ahead of time. 17. The Congress cannot have recommended that the research in this field should be expanded. 18. Instrumental responses must have been received in the process of experimentation. 19. If I had known about it before, I would have taken appropriate measures. 20. Had we analyzed this phenomenon ahead of time, the misfortune might have been prevented.

PART 2. ATMOSPHERE PROTECTION

Study the Vocabulary

hygienic [haɪ'dʒi:nɪk] *a* гигиенический, здоровый
exceed [ɪk'si:d], [ek-] v превышать, переходить границы
determine [dɪ'tɜ:mɪn] v определять, устанавливать
purification [ˌpjuərɪfɪ'keɪʃ(ə)n] n очищение, очистка
profit['prɔfɪt] *n* прибыль, доход
trapping **[**ˈtræpɪŋ**]** *n* заграждающий фильтр
recuperation [rɪˌkju:p(ə)'reɪʃ(ə)n] n рекуперация, восстановление
reduce [rɪ'dju:s] v понижать, уменьшать
eliminate [ɪ'lɪmɪneɪt], [ə-] v устранять, исключать
advantage [əd'vɑ:ntɪdʒ] n преимущество
install [ɪn'stɔ:l] v устанавливать
odour ['əudə] n запах
absorb [əb'zɔ:b] v всасывать, поглощать
contaminate [kən'tæmɪneɪt] *v* заражать, загрязнять
blow up [bləʊ'ʌp] *v* подвергаться взрыву

Pre-text exercises
Ex. 1. Mind the rules of pronunciation:
[ɔ:]: formation, absorb, storm, ashore, support, world, exhaust, source, automobile;
[*a*:]: harmful, part, dark, farm, alarm, regard, car, sharp, large, garden, plant, branch;
[ɜ:]: dispersal, occur, permissible, determine, burn, urban, emergency, conversion;
[ɛə]: air, scarce, aware, sharing, dare, compare, prepare, share, vary, careful;
[juə]: renewable, purely, cure, durable, curious, during, purification, fuel, premature;
[ɪə]: merely, serious, here, period, severe, mere, zero, fere, atmosphere;
[aɪə]: fire, ionize, biology, spire, tired, spiral, desire, admire, entire, environment.

Ex. 2. International words are understood and used by people of many nations. Read aloud, translate and remember the following ones: elementary, to characterize, character, history, position, profession, identity, perspective, structure, potential, to organize, organization, dominant, principle, dynamic, aspect, period, solidarity, cycle, voluntary, conflict, confrontation, legal, criterion, criteria, hospital, equivalents, organism, bacteria, radioactive, industry,

gas, ozone, helium, neon, mixture, electric, automobile, motor, transportation, operation.

TEXT 4. ***Fighting Atmospheric Pollution***

Article 12 of the Law on the Conservation of Nature (Russian Federation) reads: "The content of harmful substances in emissions into the atmosphere, water, and soil should not exceed maximum permissible concentrations established with due regard to all economic interests and hygienic standards". The limits were determined by a study of the influence of atmospheric pollutants on the environment and the conditions of life and health. One of the ways of solving ecological problems is to build purification plants with different methods of purification (mechanical, chemical, electric and complex). There are several methods of purification: rough, medium and fine. The purification of industrial wastes not only protects the air from pollution but also saves raw materials and provides the enterprise with additional profit. Trapping and recuperation of useful products in smoke emissions have not only sanitary but also national economic importance.

However a purification plant is not enough in itself. The most promising way to solve the problem of clean air is to improve technology reduce emissions into atmosphere and make maximum use of waste. It is cheaper and easier to find a way of eliminating the possibility of waste formation than to build a purification plant which may cost more than the production technology itself.

A similar situation exists with motor transportation: it is not enough to reduce the noise and soot in exhaust fumes, the design of the engine must be improved, the automobile modernized. Considerable improvements should be introduced into motor transportation operation to reduce air pollution by exhaust fumes and eventually eliminate it completely. The following measures are to:

1) introduce improved carburettors;
2) switch cars to gaseous fuel (liquefied gas);
3) change the course of oxidation of hydrocarbons;
4) install neutralisers;
5) design the electric automobiles.

Improvement in city planning is of great importance in keeping the air clean. Factories are now built beyond city limits. Special zones must be established between housing estates and industrial enterprises protecting the population from smoke, gases, dust, noise and unpleasant odours.

Plant life cleans the air in cities. Trees play the role of biological filters absorbing harmful components from the air while particles of dust settle on their leaves and branches.

Ex. 1. Give the English equivalents:

Нормы гигиены, защищать воздух от загрязнения, дополнительный доход, экономить сырьё, очистительный завод, улучшить технологию, решить проблему, технология производства, сократить выбросы ядовитых веществ, двигатель автомобиля, установить пределы (ограничения), бесшумная работа (двигателя, машины), отсутствие выхлопных газов, городское планирование, жилые постройки, неприятные запахи, биологические фильтры, оседать на листьях и ветках, экономическое значение.

Ex. 2. Sort out the Russian equivalents of the following word-combinations:

Low High Permissible (allowable)	concentration	допустимая низкая концентрация высокая
fine medium rough	purification	средняя грубая очистка высокая (тонкая)
poisonous (toxic) exhaust liquefied	gas	ядовитый сжиженный газ выхлопной

Ex. 3. Answer the questions:

1. How were the permissible limits of air pollution determined?
2. What is the role of the industrial waste purification?
3. What methods of purification can be distinguished?
4. What measures to eliminate exhaust fumes should be introduced?
5. What is the system of city planning nowadays?
6. What does the term “biological filters” mean?
7. Nature should be protected by law. Why?
8. What do you know about the Chernobyl disaster?

Ex. 4. Translate into English:

В России и бывших союзных республиках (former Soviet Republics) есть районы с плохой экологической ситуацией. Это Аральское море, Байкал, Кузбасс, Семипалатинск и Чернобыль. Десятилетиями около Семипалатинска испытывалось ядерное оружие (nuclear weapons), и почва там заражена радиацией. Более 20 лет назад на берегу озера Байкал был построен целлюлозно-бумажный комбинат (Pulp and Paper Mill). В результате из-за загрязнения вся экологическая система озера сильно изменилась. Аральское море также уменьшилось в результате деятельности человека.

26 апреля 1986 года на Чернобыльской атомной станции (atomic power station) произошёл взрыв 4-го реактора. В этот день произошла одна из самых больших технологических катастроф в истории человечества. Более четырёх миллионов жителей Белоруссии, Украины и России были подвергнуты (subject to) радиоактивному облучению. 850 тысяч человек всё ещё живут в заражённой зоне. Радионуклиды (radionuclides) сконцентрировались в земле и в воде, а затем были поглощены флорой и фауной. Экологические последствия катастрофы и её влияние на людей, растения и животных ещё мало изучены.

Grammar Revision

(причастие, степени сравнения прилагательных, слова заменители one / ones / that / those)

Participle

	Active	Passive
Participle I	*Solving* определение: решающий обстоятельство: решая	*Being solved* определение: решаемый, который решается обстоятельство: когда решали
Perfect Participle I	*Having solved* всегда обстоятельство: решив	*Having been solved* всегда обстоятельство: будучи решённой, после того как (ее) решили
Participle II	----	*Solved* 1) определение: решённый 2) обстоятельство: будучи решённым, когда решили

Причастие как определение

1. Compare Participle I and Participle II:

A

1) the developing countries	1) the developed countries
2) the boiling water	2) the boiled water
3) the travelling object	3) the travelled distance
4) the changing conditions	4) the changed conditions
5) the connecting line	5) the connected line

B

1) The experiments being made attract the attention of all the scientists.
2) The experiments made showed the behaviour of the participles.
3) The device being used for producing short electromagnetic waves is a magnetron.

4) The device used behaved properly.
5) The stability of the compound being formed must be considered.
6) The government formed got down to business.

2. Compare Active and Passive forms of the Participle:

Remember the meanings of the verb "to follow":
1) следовать за кем-либо, за чем-либо;
2) придерживаться (чего-то).

The film following the report was…	The film followed by a discussion was…
Фильм, последовавший за докладом, был …	Фильм, за которым последовала дискуссия, был..
1. The discussion following the report showed …	1. The report followed by a discussion was of interest.
2. The concert following the meeting was …	2. The meeting followed by a concert began …
3. The paper following the research presented its results.	3. The research followed by a paper was carried on …
4. The scientist following this method was …	4. The method followed by the scientist gave …

Причастие как обстоятельство
These words can be used before the Participle:

When – когда (часто не переводится)	While – в то время как (часто не переводится)
Until – пока не	Unless – если не
If – если	Once – когда, как только, если
Though – хотя	

1. While studying light Newton invented the reflecting telescope. 2. We know that most bodies expend when heated. 3. Having calculated the data, the scientist applied them in his research. 4. Being expressed in terms of international metric system, the results of the measurement are clear to everybody. 5. Unless given the correct data, the scientists cannot proceed with their work. 6. Until translated into Russian, this paper was not known. 7. Having been measured with unreliable instruments, the data were incorrect. 8. Giving so much information about the planets, these experiments are very useful. 9. Once started, the process is difficult to stop. 10. When falling, the more massive bodies have more inertia to overcome. 11. When accompanied by mother, she felt her feet.

Nominative Absolute Participle Construction
Независимый причастный оборот

Переводится:

1. В начале предложения – придаточным предложением с союзами «так как, после того как, когда, если»: The speed of lights being extremely great, we cannot measure it by ordinary methods. – Так как скорость света чрезвычайно велика, мы не можем измерить её с помощью обычных методов.

2. В конце предложения – придаточным предложением с союзами «причём, а, и, но»: All substances consist of molecules, molecules being made up of atoms. – Все вещества состоят из молекул, причем молекулы состоят из атомов.

3. Может быть введён словом “with”, причем “with” не переводится: With space ships flying so far, we are able to reach some remote planets. – Теперь, когда космические корабли летают так далеко, мы можем добраться до далёких планет.

1. Translate, paying attention to Nominative Absolute Participle Construction:

1. Water is denser than air, rays being reflected towards the perpendicular. 2. There exist of course various kinds of light, each corresponding to some definite colour. 3. Work is the result of energy, the latter being defined as capacity for doing work. 4. Silver being very expensive, we seldom use it as a conductor. 5. Other conditions being equal, the acceleration will be the same. 6. With the experiment carried out, they could make necessary notes. 7. With research involving more and more people, the profession of a scientist has become one of the most popular nowadays. 8. Acids react with oxides of all the metals, with salt and water being formed. 9. All these elements are radioactive, their atoms being unstable and undergoing spontaneous disintegration. 10. Development in language simulation has taken place for more than a decade, with interest increasing rapidly in recent years.

2. Translate into Russian, paying attention to Participle:

1. Having analyzed all in detail she understood the real picture of the phenomenon. 2. The realized plans were connected with the experiments carried out in the experimental laboratory. 3. Having discussed the statistical data they came to the conclusion of their importance. 4. They couldn't agree with his point of view expressed so illogically. 5. The developing science raises more and more important questions for the further discussion. 6. The discovery made and the data obtained were published in “Science News”. 7. To watch the changing world is rather interesting. 8. Having made observations on the subject of his investigation he summarized the new data. 9. When published, the new data produced much polemic and a great number of discussions. 10. Having been

conducted in the southern regions, the poll was transferred to the north regions. 11. He spoke of the results obtained, conclusions made and future plans taken.

3. Revise the rule of degrees of comparison of adjectives and adverbs and finish the sentences:

1. This jacket is too small. I need a … size. (large)
2. You look … Have you lost weight? (thin)
3. He is not so keen on his studies. He's … in having a good time. (interested)
4. You will find your way around the town … if you have a map. (easily)
5. She has … merits than her sister. (many)
6. You are making too much noise. Can you be a bit … ? (quiet)
7. There were a lot of people on the bus. It was … than usual. (crowded)
8. You are late. I expected you …. (early)
9. You hardly ever write to me. Why don't you write a bit … often? (much)
10. The hotel was surprisingly cheap. I thought it would be … . (expensive)
11. It's a pity you live so far away. I wish you lived … . (near)
12. People should eat … fat to reduce the risk of heart disease. (little)
13. I know him … than her. (good)

4. Translate into Russian, paying attention to the use of words one – ones; that – those, the former ... the latter.

1. This finding is more accurate than that one. 2. The right hand is usually stronger than the left one. 3. The petroleum consumption is very big. We want to get smaller one. 4. This is a new measuring instrument; its accuracy is much higher than that of the old one. 5. The most extensive research was that of Terry Callaghan. 6. We use the method similar to those given above. 7. The instruments at our laboratory are not so modern as those at yours. 8. Among the advantages the following ones can be mentioned. 9. The former method is much more complicated than the latter one. 10. In this paper we shall take the former formula. 11. Your ones are too like sevens. 12. They say she has an electromobile, but no one has ever seen him.

UNIT III. RATIONAL USE OF WATER RESOURCES

Study the Vocabulary

corresponding [ˌkɔrɪ'spɔndɪŋ] *a* соответственный
stable ['steɪbl] *a* устойчивый, прочный,
community [kə'mju:nətɪ] *n* община, населённый пункт
diverse [daɪ'vɜ:s] *a* разнообразный, разный
concurrent [kən'kʌr(ə)nt] *n* неотъемлемая часть, фактор
disposal [dɪs'pəuz(ə)l] *n* расположение, размещение

receptacle [rɪ'septəkl] *n* вместилище, хранилище
supply [sə'plaɪ] *n* снабжение, поставка, запас
adequate ['ædɪkwət] *a* достаточный
volume ['vɔlju:m] *n* объём
detrimental [ˌdetrɪ'ment(ə)l] *a* приносящий убыток
apparent [ə'pær(ə)nt] *a* явный, очевидный
involve [ɪn'vɔlv] *v* зд. затрагивать
contaminate [kən'tæmɪneɪt] *v* заражать, делать радиоактивным
menacing ['menəsɪŋ] *a* угрожающий, опасный
capacity for [kə'pæsətɪ fɔ:] *n* способность (к чему-либо)
range [reɪndʒ] *v* колебаться в пределах
damage ['dæmɪdʒ] *v* наносить ущерб

Pre-text exercises
Ex. 1. Mind the rules of pronunciation:
[əu]: disposal, growth, low, throw, slow, cold, boat, total, follow, ocean, below;
[au]: round, pound, ground, sound, outer, thousand, without, mountain, about, amount, around, account, now, brown, down, allow;
[auə]: our, hour, sour, flower, tower, power, shower;
[ʌ]: some, structure, concurrent, other, ton, hunting, wonder, among, become, discover, another, above, confront, agriculture, country;
[ə:]: dirty, bird, world, worst, worth, work, firm, term, turn, worm;
[ai]: define, describe, sight, localize, supply, right, find, die, high, sign, Rhine, mind, wild, dynamic, mild, bind.

Ex. 2. Read the international words and guess their meaning. Mind the stress:

phe'nomenon	accomo 'dation
com'panion	'product
insti' tution	associ' ation
dy'namic	aca' demic
'industries	'adequate
organi 'zation	tec 'tonic

Ex. 3. Give the corresponding *verbs* and translate according to the model.
Model: translation → to translate: перевод → переводить.
Action, share, engagement, identity, increase, injury, dependent, comprehensive, dominant, influence, characteristic.

Ex. 4. Insert the right preposition (*by, on, with, in, to, of, away, from, without, for*).
I. 1. My mother is afraid ... rats. 2. Don't enter ... the room. 3. Wait ... me. I'll be back ... a few minutes. 4. ... nine o'clock the lecturer entered ... the hall, walked

up ... the table, put his bag ... it, looked.... everybody and began his lecture. The lecture, as all the lectures ... this professor, was very interesting, and the students listened ... him with great attention. 5. Turn ... the corner ... the house and look ... the flowers grown ... my mother: aren't they beautiful? 6. She complained ... feeling bad and could not answer ... the questions ... the teacher. 7. He bought a book ... English poems and gave it... his sister. 8. I wrote ... him asking to send me a box ... chocolates. 9. The roof ... the house is very old. 10. There is a monument ... Pushkin in the Square ... Arts. 11. One wheel ... my car must be changed. 12. It is clear ... me that you don't know your lesson. 13. I get up ... seven o'clock or ... a quarter past seven. But last Sunday I slept very long and got up only ... noon. 14. My birthday is ... the ninth of July. 15. ... the twenty-fifth of December European people celebrate Christmas. 16. We did not want to stay ... town on such a hot day, so we went ... the country. 17. I opened the door and went ... the classroom. The teacher was writing some words ... the blackboard. The pupils were writing these words ... their exercise-books. There were some books and pens ... the teacher's table. There were two maps ... the wall and some flowers ... the window-sills. I saw a pen ... the floor. I picked it up and put it ... the table. 18. He put his hand ... his pocket, took out a letter and dropped it ... the mail-box hunging ... the wall of the house. Then he got ... his car and drove off.

II. 1. The seas and oceans are ….. danger. 2. The easiest method ….. waste disposal was to “throw it …..”. 3. The term “pollution” has been defined ….. ecologists. 4. A lot …..birds and fish die or get contaminated because ….. polluted water. 5. Man cannot exist ….. water. 6. The scientists try to find a solution ….. this ecological problem. 7. People may get sick ….. eating contaminated fish. 8. The phenomenon ….. water pollution has been man’s constant companion ….. the development ….. communities. 9. Some beaches are dangerous ….. swimming. 10. The detrimental effects ….. the ecological structure are caused ….. water pollution.

TEXT 1. ***Sources of Water Pollution***

Ever since man progressed from hunting to agricultural society, with the corresponding development of stable communities, the phenomenon of water pollution has been his constant companion. As agricultural methods improved, larger communities and diverse industries developed and grew into the present modern society. Concurrent with this growth, however, was the increasing percentage of waste materials and the problems of disposal. When the total volume of waste from a community was relatively small, the easiest method of disposal was to “throw it away”, usually into the nearest receptacle. Since man cannot exist without water, community development and city growth centred in the areas where the water supplies were adequate and continuous. Initially this meant development in river valleys, and thus the nearest receptacle for waste was water.

The term “pollution” may be described here as “the detrimental effects on a localized ecological structure by the addition of the waste products of a society”, then it is apparent that the first noticeable pollution problem should have involved the supply of drinking water.

One of the most important water pollution problems is in the seas and oceans. Many ships sail in the ocean water – fishing boats, freight ships, ships carrying people, oil-tankers. If some oil or trash from the ships gets into the ocean, the water becomes dirty. A lot of birds and fish die or get contaminated because of the polluted water. Fishermen catch contaminated fish so people may get sick from eating them. Fish may also move to another part of the ocean. Lakes and rivers are getting polluted, too.

The examples of water system where the effects of pollution have become threatening are the Adriatic, Aral, Baltic, Mediterranean seas; the Thames, Rhine, Seine, Mississippi, Volga rRivers; the Great Lakes in America and Canada and lake Baikal. But dynamic systems have a remarkable capacity for regeneration and with careful planning even the most seriously polluted waterways may be brought back into full use. So scientists are attempting to find a solution to this problem.

Ex.1. Give the English equivalent:

Сельское хозяйство, соответственное развитие, явление, постоянный спутник, современное общество, увеличение отходов, полный объём, относительно мал, метод размещения, выбросить, существовать, запасы воды, долины рек, определять, описывать, вредное воздействие, путём добавления чего-то, достойные внимания проблемы, питьевая вода, рыболовное судно, грузовое судно, нефтеналивное судно, мусор (отбросы), грязная вода, заражённая рыба, заболеть, опасный для купания, Средиземное море, пытаться что-либо сделать, найти решение, водоёмы, замечательная способность к восстановлению, тщательное планирование.

Ex. 2. Answer the questions:

1. Has man’s interference in nature increased with the development of civilization?
2. What was the easiest method of waste disposal?
3. How has the term “pollution” been described?
4. What should the first noticeable pollution problems have involved?
5. One of the most important pollution problems is in the oceans, isn’t it?
6. How do ships pollute water?
7. What are the consequences of water pollution?
8. Do scientists try to solve ecological problems?
9. Is it possible to regenerate waterways?

Ex. 3. Translate into English, paying attention to numerals:

Байкал – озеро тектонического происхождения в южной части Восточной Сибири, самое глубокое озеро планеты Земля, крупнейший природный резервуар пресной воды. Возраст озера – 25–35 млн. лет. Озеро окружено со всех сторон горами. Ширина Байкала колеблется от 24 до 79 км. Глубина озера – 1637 м. Длина береговой линии – 2100 км. Запасы воды в Байкале составляют около 19 % мировых запасов пресной воды.

Озеро и прибрежные территории отличаются уникальным разнообразием флоры и фауны. Местные жители и многие в России традиционно называют Байкал морем, а также «жемчужиной Сибири».

В XX веке Байкал был внесён в список объектов Всемирного наследия ЮНЕСКО (UNESCO World Heritage Sites). Защитники окружающей среды выражают протесты против организации какого-либо производства на Байкале, строительства трубопроводов (trunk pipeline) и атомной станции (nuclear plant), которые могут нанести непоправимый ущерб окружающей среде.

Ex. 4. Complete the dialogue, act it out and make your own one.

Customer: Good morning.
Salesman: Доброе утро, сэр. Могу я вам помочь?
C.: Я хочу купить новый фильтр для воды.
S.: Do you have anything special in mind?
C.: Он должен быть недорогой и не слишком большой.
S.: Понятно. Как насчет фирмы Цептер (Zepter)? Это хорошая и недорогая установка (device). Одна из них стоит справа от вас.
C.: How much is it?
S.: 700 долларов.
C.: Можно взглянуть?
S.: Сюда, пожалуйста. Это очень популярная модель. Давайте посмотрим.
C.: Is water economical to run?
S.: Absolutely.
C.: What about system specification?
S.: Система действует по принципу обратного осмоса (reverse osmosis system). Она фильтрует воду от вредных примесей, при этом не изменяя ее физического состояния и сохраняя ее вкусовые качества (water taste).
S.: Хорошо. Мне нравится эта машина.

Ex. 5. Translate into English:

1. Суда, сбрасывая отходы в океан, загрязняют воду. 2. Рыба в загрязнённой воде погибает или становится ядовитой. 3. Чрезмерное использование земель ведёт к нехватке водных ресурсов. 4. Загрязнение окружающей среды вызывает кислотный дождь, а кислотный дождь

нарушает баланс в природе. 5. Люди должны научиться защищать землю, воду и воздух от загрязнения. 6. Окружающая среда – это не неиссякаемый источник ресурсов. 7. Взаимодействие человека и природы неотделимо от истории человечества. 8. Международное сообщество предпринимает меры для охраны водных ресурсов. 9. Машины и фабрики загрязняют воздух и разрушают озоновый слой Земли. 10. Некоторые виды животных и растений находятся на грани исчезновения вследствие деятельности человека. 11. Загрязнение окружающей среды сокращает ресурсы промышленности.

Grammar Revision
(герундий, сравнительные конструкции)

1. Translate the following sentences, paying attention to the gerund:

1. Carrying out experiments is important for every scientist. 2. It is no use searching for another approach. 3. It seems to me the case is not worth mentioning. 4. Measuring resistance is necessary in many tests. 5. One should avoid mixing these two substances. 6. The engine went on running. 7. It is no good arguing about this issue. 8. In recent years man has succeeded in controlling chemical changes. 9. Catalysts aid in accelerating reactions. 10. The group of experts looked forward to obtaining reliable results. 11. The article aims at acquainting the readers with modern achievements in medicine. 12. The expansive force of water in freezing is enormous. 13. Upon being heated to a high temperature many metallic compounds are decomposed. 14. Sulphur is hardened by being mixed with copper. 15. He had a good opportunity of becoming well acquainted with experimental work. 16. There is no reason for making any corrections. 17. The device has the merit of being suitable for many purposes. 18. Without knowing these facts it is impossible to build up a true picture of the world. 19. She answered without hesitating.

The Gerundial Construction

1) предлог +притяж. местоимение + герундий
2) местоимение + существительное + герундий
3) сущ. в притяж. или общем падеже + герундий

Герундиальный оборот обычно переводится на русский язык придаточным предложением, подлежащее которого соответствует притяжательному местоимению или существительному в притяжательном или общем падеже, а сказуемое – герундию этого оборота: Ecologists are indignant at *companies dumping* chemical wastes to water. – Экологи возмущаются, что компании сбрасывают отходы вводу.

2. Translate the following sentences, paying attention to the gerundial construction:

1. Biologists object to farmers spraying chemicals on crops. 2. Low electric conductivity of rubber resulted in its being used in cables. 3. This depends on the atomic weights of these substances being equal. 4. He insisted on the engine being examined. 5. These are the chief causes of crude rubber being used. 6. Dr. Richard's being appointed head of the Department was quite unexpected. 7. They relied on the date being published. 8. Combustion may be incomplete owing to insufficient oxygen being present. 9. There is little probability of atmosphere being on that planet. 10. Metals cannot be dissolved without its being changed into new substances. 11. Without his participating in the concert the programme will be, I'm afraid, dull. 12. He couldn't leave without receiving necessary information.13. Without practising English every day it is impossible to have a good knowledge of the language. 14. Children are usually very angry at their parents for having divorced and can't work it out emotionally. 15. He heard of her having been given a theme of freedom for writing an essay. 16. The subjects will be tested individually by being given simple problems to solve. 17. Knowing and understanding may play an important role in survival. 18. In spite of necessary results having been obtained the professor made the students repeat the experiment.

3. Translate from English into Russian, paying attention to constructions: as ... as; not so / as ... as; the ...the ... ; much more ...; twice as ... as:

1. This instinct is as internal as that one. 2. There is much more to your success than luck. 3. This theme is as difficult as mine. 4. The problem is not so simple as it seems. 5. Her tutor is not as strict as ours. 6. I'll get back as quick as I can. 7. Your workplace is twice as large as mine. 8. This box is three times as heavy as that. 9. Moscow is half as big as New York. 10. The more you have, the more you want. 11. The longer I stay here, the better I like it. 12. The Russian language is much more difficult than English. 13. Mineral resources management is much more complex now. 14. The less mistakes you make in the test, the higher grade you get. 15. The old word is that "An old man is twice a child."

UNIT IV. MINING AND RATIONAL USE OF LAND RESOURCES

Study the Vocabulary

Mining ['maɪnɪŋ] *n* горное дело, разработка полезных ископаемых
interference [ˌɪntə'fɪər(ə)n(t)s] *n* вмешательство
discharge ['dɪstʃɑ:dʒ] *n* выхлоп, выделение
extend [ɪk'stend], [ek-] *v* простирать (ся)

vegetation [ˌvedʒɪ'teɪʃ(ə)n] *n* растительность
soil [sɔɪl] *n* почва, земля
leach [li:ʧ] *v* выщелачивать
nutrient ['nju:trɪənt] *n* питательное вещество
damage ['dæmɪʤ] *n* вред, ущерб
be under threat [bi: 'ʌndə θret] быть под угрозой
upset [ʌp'set] *v* нарушать
reduce [rɪ'dju:s] *v* сокращать
wildlife ['waɪldlaɪf] *n* дикая природа
species ['spi:ʃi:z] *n* вид, род, порода
mammal ['mæm(ə)l] *n* млекопитающее
extinction [ɪk'stɪŋkʃ(ə)n], [ek-] *n* вымирание
spray [spreɪ] *v* распылять
pest [pest] *n* паразит, вредитель
pesticide ['pestɪsaɪd] *n* пестицид
destruction [dɪ'strʌkʃ(ə)n] *n* разрушение, уничтожение
habitat ['hæbɪtæt] *n* среда обитания
life-span [laɪf spæn] *n* продолжительность жизни
for the sake of [~seɪk~] ради (чего-то, кого-то)
open pit ['əup(ə)n pɪt] открытая разработка; карьер
drilling ['drɪ lɪ ŋ] бурение
blasting ['bla:sti ŋ] буровзрывные работы
loading ['ləudiŋ] загрузка
hauling [həuliŋ] транспортировка
sinkhole ['siŋkhəul] *n* карстовая воронка
biodiversity [‘baiəudai'vɛ:siti] *n* биоразнообразие
debris ['debris] *n* дебрис, обломочный материал
ore body [o: 'bodi] *n* рудное тело, массивное месторождение

Pre-text exercises
Ex. 1. Mind the rules of pronunciation:
[k]: school, scheme, chemical, chemicals, technical, architect, mechanism;
[aɪ] *verbs:* try, fly, unify, occupy, multiply, rely, supply, reply, simplify, terrify;
[ɪ]: gradually, laboratory, discriminatory, industry, normally, mostly, ordinary;
[j]: yet, yard, yellow, yield, beyond, yes, yesterday, year, yen, York, youth;
[t]: developed, expressed, influenced, produced, worked, stopped, reached;
[d]: served, used, decomposed, lived, seemed, undisclosed, called, formed;
[id]: divided, unlimited, refracted, expected, depleted, converted, completed;
[θ]: earth, north, threat, truth, depth, length, warmth, width, health, thoroughly.

Ex. 2. Read and translate nouns with the suffixes:
-ance: substance, distance, importance, admittance, dissonance, appearance,

disappearance, balance, clearance, expectance, maintenance, acceptance;
-ence: science, difference, existence, influence, reference, sentence, turbulence, absence, preference, conference.

TEXT 1. ***Mining***
Part 1. ***Overview***

Mining is the extraction of valuable minerals or other geological materials from the earth, from an ore body, vein or (coal) seam. The term also includes the removal of soil. Materials recovered by mining include base metals, precious metals, iron, uranium, coal, diamonds, limestone, oil shale, rock salt and potash. Any material that cannot be grown through agricultural processes, or created artificially in a laboratory or factory, is usually mined. Mining in a wider sense comprises extraction of any non-renewable resource (e.g., petroleum, natural gas, or even water). Mining of stone and metal has been done since pre-historic times. Modern mining processes involve prospecting for ore bodies, analysis of the profit potential of a proposed mine, extraction of desired materials and finally reclamation of the land to prepare it for other uses once the mine is closed.

The nature of mining processes creates a potential negative impact on the environment both during the mining operations and for years after the mine is closed. This impact has led to most of the world's nations adopting regulations to moderate the negative effects of mining operations. Safety has long been a concern as well, though modern practices have improved safety in mines significantly.

Part 2. ***Open Pit Mining***

Open pit mining is the process of extracting beneficial minerals by surface excavations. Materials typically extracted from open-pit mines include: clay, coal, copper, coquina, diamonds, gravel and stone (stone refers to bedrock, while gravel is unconsolidated material, as found in gracial or fluvial deposits), granite, gritstone, gypsum, limestone, marble, metal ores, such as copper, iron, gold, silver and molybdenum, uranium.
Modern open pit mining utilizes large mechanical equipment to remove the ore and waste from the open pit excavation. The amount of equipment and its type and size depend on the characteristics of the ore and waste and the required production capacity. In general, there are four basic unit operations common to most open pit mining operations. These are drilling, blasting, loading, and hauling.

There are essentially two methods for mining: surface mining and underground mining. Open-pit being one of the surface mining methods is regarded to be advantageous over underground methods. Underground mining however can be

considered as being more acceptable than surface mining from environmental and social perspectives.

Part 3. *Environmental Issues with Mining*

Since ancient times Nature has served Man, being the source of his life. For thousands of years people lived in harmony with environment and it seemed to them that natural riches were unlimited. But with the development of civilization, with the rapid growth of science and technology man's interference in nature began to produce a negative effect on the environment.

Environmental issues can include erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. In some cases, additional forest logging is done in the vicinity of mines to increase the available room for the storage of the created debris and soil. Contamination resulting from leakage of chemicals can also affect the health of the local population if not properly controlled. Extreme examples of pollution from mining activities include coal fires, which can last for years or even decades, producing massive amounts of environmental damage.

Mining companies in most countries are required to follow stringent environmental and rehabilitation codes in order to minimize environmental impact and avoid impacts on human health. These codes and regulations all require the common steps of environmental impact assessment, environmental monitoring during operation and after closure. However, in some areas, particularly in the developing world, regulation may not be well enforced by governments.

This was followed up by the Global Mining Initiative which was initiated by the largest metals and mining companies and led to the formation of the International Council on Mining and Metals to "act as a catalyst" for social and environmental performance improvement in the mining and metals industry internationally. The mining industry has provided funding to various conservation groups, some of which have been working with conservation agendas that are at odds with emerging acceptance of the rights of indigenous people – particularly rights to make land-use decisions.

Ex. 1. Match the pairs:

1) prospecting for ore bodies	a) fragments or pieces of material destroyed or broken
2) mining	b) the wearing away of rocks and other deposits on the earth's surface by the action of water, ice, wind, etc.

3) coal fires	c) an amount of liquid or gas that is escaping from a pipe or container by means of a crack or hole
4) affect the health	d) taking out of valuable minerals
5) debris	e) the process of identifying ore deposits
6) leakage	f) prospecting, analysis, extraction and reclamation
7) erosion	g) a common metal that is not considered precious, such as copper, tin, or zinc
8) modern mining involves	h) example of mining pollution
9) base metal	i) disturb emotionally or mentally human physical state
10) open pit	j) a mine where the coal, metal, or minerals are near the surface and underground passages are not needed

Ex. 2. Choose the right word:

1. Mining is the process or industry of ……. coal or other minerals from a mine.

a) growing b) removal of c) laying

2. Sinkhole is a depression in the ground surface, esp. in limestone where a surface stream ……..

a) increases b) disappears c) appears

3. Biodiversity is the existence of a wide variety of plant and animal species living in ……..

a) Zoo b) man-made environment c) natural environment

4. Logging is the activity or business of felling …… and cutting and preparing the timber.

a) trees b) minerals c) grass

5. Vicinity is the ……. near or surrounding a particular mine.

a) process b) environment c) area

6. Non-renewable resource is an …….resource

a) inexhaustible b) complete c) exhaustible

7. Open-pit is advantageous over …… methods

a) surface b) underground c) borehole

Ex. 3. Complete the sentences:

1. Environmental issues can include erosion, formation of ……., loss of ……., and ……. of soil, groundwater and surface water by chemicals from mining processes.

2. Contamination resulting from leakage of chemicals can affect the ……

3. Mining companies in most countries are required to follow stringent environmental and rehabilitation codes in order ……

4. Coal fires, which can last for years or even decades, produce ……..

5……. is the industry and activities connected with getting valuable or useful minerals from the ground, for example coal, diamonds, or gold.
6. With the development of…….. man's interference in nature began to produce a negative effect on the environment.
7. Global Mining Initiative was initiated by the ……companies and led to the formation of the……
8. Underground mining however can be considered as being more acceptable than surface mining from ……. perspectives.

TEXT 2
Read the text give the title and define the main disease of civilization:

The discharge of waste gases and dust into the atmosphere returns to the Earth in the form of "acid rain". Our forests are dying from acid rain. It extends to soil and vegetation. In soil a higher acid content leaches away nutrients and kills useful micro-organisms. This, in turn, affects the balance of nature and leads to forests damage and therefore reduces the resources of forestry industry. Vast forests in the north of European Russia and the Far East are under threat being cut down or burnt in fire. Their disappearance upsets the oxygen balance and results in damage to wildlife.

According to the International Union for the Protection of Nature some rare species of animals and plants have disappeared from the planet in the course of the last 70 years. About 132 mammal and 26 bird species face extinction not so much due to hunting as due to the pollution of the biosphere. To this one can add the rise of chemicals, radioactivity and other types of pollution. Farmers spray chemicals on crops to protect them against pests. These chemicals are called pesticides. Scientists have proved that pesticides often end up in our food. Pesticides may cause health problems – especially for kids.

The destruction of nature gradually led to the loss of the most essential element for existence, a healthy biological habitat. Environmental pollution increases the cases of disease, raises the cost of medical services and reduces the life-span of a man. By now the pollution and poisoning of the soil, water and air have reached a critical point.

Some progress has been already made in the direction of preserving nature. As many as 159 countries have set up environmental protection agencies. Numerous conferences have been held by these agencies to discuss questions of ecologically poor regions. The international organization Greenpeace is also doing much to preserve the environment. But these are only the initial steps and they must be carried forward to protect nature, to save life on the planet not only for the sake of the present but also for the future generations.

Ex. 1. Give the English equivalents:

Добыча полезных ископаемых, ценные металлы, горнодобывающие работы, разведка природных ископаемых, восстановление земель, оценка воздействия на окружающую среду, природные богатства, быстрый рост, развитие цивилизации, вмешательство человека, отрицательное воздействие, вред почвам, растительности, дикой природе, привести к …, лесничество, вырубка лесов, нарушать кислородный баланс, редкие виды животных и растений, сталкиваться с вымиранием, опрыскивать химикалиями, защищать от вредителей, попадать в пищу, случаи заболевания, снизить продолжительность жизни, достичь критической точки, первые шаги, ради будущего поколения.

Ex. 2. Answer the questions:

1. What are the consequences of man's interference in nature?
2. What causes acid rain?
3. How does acid rain affect the balance of nature?
4. What does the disappearance of forests result in?
5. Why do some species of animals and plants face extinction?
6. How do pesticides end up in our food?
7. What reduces the life-span of a man?
8. What has been made to protect nature?

Ex. 3. Make up a summary according to the plan:

1. The object (purpose) of this paper (extract) is….
2. The paper (article) discusses some problems relating to (deals with some aspects of) ...
3. At the beginning the author points out that…
4. Then the extract goes on to the problem of ...
5. The author concludes that (summarizes) ...
6. In my opinion (To my mind, I think)...
7. The paper (article) is interesting (not interesting), of importance (of little importance), valuable (invaluable), up-to-date (out-of-date), useful (useless)...

Ex. 4. Complete the dialogue and act it out:

– You are wearing a green T-shirt. Are you a Greenpeace supporter?
– Да, и вся наша группа.
– Oh, I'm pleased to hear that. It's a noble aim to keep the planet green and cities clean, eh?
– Да, но мы понимаем защиту окружающей среды шире, чем просто уборка мусора с улиц и посадка деревьев. Мы должны учитывать все факторы, от которых зависит выживание человека.
– You want everybody to do his or her best in caring for all human beings. Do

you mean I am to stop going by car, using sprays, eating food in plastic cans, or wearing a fur coat?

– Так было бы лучше для окружающей среды и в конечном счете для вас.
– Should we reject the progress then?
– Никогда! Но мы должны его контролировать!

Ex. 5. Translate into English:

Гри́нпис **(***Greenpeace***)** – международная общественная природоохранная организация, основанная в городе Ванкувер (Канада) 15 сентября 1971 года Дэвидом Мактаггартом.

Основная цель «Гринпис» – добиться решения глобальных экологических проблем, в том числе путём привлечения к ним внимания общественности и властей. Организация имеет свои офисы в более чем 40 странах и международный координационный орган (coordinating body) в Амстердаме, Нидерландах (the Netherlands). Гринпис занимается такими всемирными вопросами, как глобальное потепление, вырубка лесов, чрезмерный промысел рыбы (overfishing), коммерческий китобойный промысел (whaling), а так же антиядерными вопросами (anti-nuclear).

Общество «Друзья земли» (*Friends of the Earth International (FOEI*) – сеть международных природоохранных организаций в 76 странах. Общество «Друзья земли» рассматривает такие экологические проблемы, как сохранение лесов и биологического разнообразия (biodiversity), продовольственная независимость (food sovereignty), изменение климата, энергоресурсы, защита прав человека и окружающей среды, возмещение (repayment) экологического долга, который богатые страны обязаны выплатить за использование (to exploit) природных ресурсов.

Grammar Revision
Verbal Noun, Gerund and Participle I (in comparison)

1. Translate into Russian, paying attention to the V-ing forms:

1. About 1/3 of trash comes from packaging. 2. Taking an active part in the development of rechanneling various bodies of water, scientists insist on all the pros and cons being thoroughly weighed. 3. The observing of anomalous phenomena in the atmosphere and data on weather and climatic changes indicate that nuclear tests could bring about an ecological disaster. 4. Being closely related to the economy, the environment supplies it with all its resources, such as water, timber, minerals and oil. 5. Some developing countries have reserves being undisclosed yet. 6. The conquering of nature has led to ecological problems. 7. Economic, social, technological and biological processes having become so interdependent must be seen as a complex economic system. 8. Not every industrial enterprise is capable of effecting such reconstruction rapidly.

2. Translate the following sentences, paying attention to the non-finite forms:
1. The amount of polonium to be obtained from a uranium mineral can be simply calculated. 2. We may suppose the alpha particles within the nucleus to be in motion. 3. The speed of light being extremely great, we cannot measure it by ordinary means. 4. The isolation of radium followed by many important investigations made on other previously unknown elements proved to be of great importance. 5. Water being denser than air, rays are refracted towards the perpendicular. 6. The amount of scattering to be expected on the basis of the formula given above was computed by Einstein. 7. All these elements are radioactive, their atoms being unstable and undergoing spontaneous disintegration. 8. He was the first to determine the exact weight proportions of the components of water. 9. Other conditions being equal, the temperature remains the same. 10. The gas to be tested is enclosed in a long glass tube. 11. Once formed, bubbles rise because of the vapour being less dense than the liquid in which it is suspended. 12. The water appears to be decomposed. 13. It is sometimes difficult to predict what sort of material is likely to prove suitable for the purpose in mind. 14. The chemist wants the reaction to go as nearly to completion as possible. 15. Here seems to be no room for many additional positive ions coming from the negative glow. 16. Work is the result of energy, the latter usually being defined as capacity for doing work. 17. There are several precautions to be observed in making such experiments. 18. Nineteenth-century physics succeeded in achieving the complete domination of phenomena we observe around us. 19. More accurate experiments are likely to contribute significant information. 20. We have thought this law to hold only for gases which are under normal conditions. 21. They expected the acceleration to be of different weights, but this was not the case. 22. He seems to know this rule well.

TEXT 3. ***Inheritance of Problems***

1. The Earth is known to be several billion years old. Throughout this span of time the environment has been constantly changing – sometimes very slow, but at other times quite rapidly. It proves that the environment is a dynamic system that must be understood and accommodated to adapt man’s activities to a constantly changing situation than to an unchanging or static system. On the other hand, the very fact of constant change opens many avenues for modification and accommodation that would not be available in a forever constant and unchanging system.

2. Although it is important that we have in mind the long term facts concerning Earth history, modern man has become such an effective agent of physical and chemical change that he has been able to produce major modifications. These are made by man with the intention of producing improvements and advantages for people. Problems result from the fact that by-products and side-effects do

occur, that are neither desirable nor pleasing, and at some times and places may be hazardous or even calamitous.

3. The ways in which man treats his physical surroundings, produces and uses the available nonliving resources, and plans for his future needs are, of course, social determinations. When we consider the role of earth science in solving problems we see that the earth sciences can and should develop answers to all of the questions we have asked. There are some contributions of the earth scientists to the environmental problem solving in five general categories.

4. The first of these is the most efficient adjustment of man's use of the Earth's surface to all of the physical features and characteristics above- and belowground. Second is determination of the factors that influence the safety and permanence of disposal of waste materials and trash of all kinds – both in the rocks near the surface and at great depth in mines and wells. Third is providing information for the planning and development of safe, adequate, and continuing water supplies in locations that will serve as populated areas. Fourth is the identification of rock and material resources to provide for future availability of needed raw materials, or of appropriate substitute materials. And, fifth is the recognition of man as a major geologic agent by monitoring the changes he has caused in his environment, and by providing remedies where these changes are, or may become, harmful.

Ex. 1. Read the text and say if the following statements:

− true;
− false;
− there is no information in the text.

1) Oil spill is one of the environmental threats nowadays.
2) The environment has always been changing rapidly.
3) In future man won't need raw materials as they will be substituted for.
4) Scientists determine the factors that influence the safety of trash of all kinds.

Ex. 2. Which part of the text (1, 2, 3, 4) does the following information correspond to:
1) The role of Earth science in solving environmental problems.
2) The reason for man to produce modifications of nature.

Ex. 3. Choose the right response to the question: What causes environmental problems the mankind faces?

− scientists not making contributions to environmental problem solving;
− planning and development of water supplies in most populated areas;
− effects occurring during different industrial processes;
− the age of the Earth.

Ex. 4. Define the main idea of the text:
− We need continuing water supplies;
− Safety of waste materials is the major problem nowadays;
− Man and environment are interconnected and are in constant change;
− Earth scientists research the problem of space exploration.

TEXT 4. ***Famous Scientists***

I. Andrey Dmitriyevich Sakharov was a distinguished scientist and a great human being. He was born in 1921 to a family of the teacher of physics, a well-known author of popular scientific literature and textbooks.

A. Sakharov left school with honours and entered Physics Department of the Moscow University. He graduated from the University with honours and was assigned an engineer-inventor to the Military Plant in Ulyanovsk. In 1947 he defended his thesis on theoretical physics.

In 1948 A. Sakharov was included into the special group working out thermonuclear weapon. The following 20 years were devoted to the steady work at creating and improving hydrogen bomb (H-bomb). His contribution to the bomb development proved to be so great that he was called "The father of thermonuclear bomb". In 1950 Sakharov along with Tamm began thinking of the guided thermonuclear reaction, namely of using thermonuclear energy for peaceful purposes. Then Sakharov was transferred to the secret All-Union Scientific Research Institute of Experimental Physics. There he suggested several original ways of starting thermonuclear reaction without resorting to atomic explosion.

In 1953 A. Sakharov defended a doctoral thesis. In August of the same year the first H-bomb in the World was exploded in the testing area of Semipalatinsk. He was elected a full member of the Academy of Sciences. In 1956 after the successful testing of the modified H-bomb dropped from the aircraft Sakharov received several government awards.

Since 1957 Sakharov had opposed to conducting nuclear tests more and more emphatically. He received the honor and glory of his country for his outstanding work in physics. He could have spent the rest of his life in wealth and respect of his countrymen, but when he saw abuse of power, he chose instead to use his prestige to fight the authorities. In the 1970s there appeared Sakharov's work Reflection of Progress, Peaceful Co-Existence and Intellectual Freedom. It was translated into several languages and published with enormous edition abroad. Sakharov was debarred from the secret work. Along with other supporters he formed Human Rights Committee. His activities got a deep appreciation abroad. In 1975 he was awarded the Nobel Prize.

After the Soviet Union troops being brought to Afghanistan Sakharov made a

protest and organized a press-conference where he condemned those actions.

After that he was detained, deprived of all his government awards and exiled. Nevertheless, he acted with strong willpower and firmness and went on working. In 1983 in the town of Gorky he wrote one of his main public papers Danger of Nuclear Warfare. With the beginning of perestroika, to the credit of M. Gorbachev, Sakharov was freed and even allowed to travel abroad. Not long before his death he was committed to working out the new Constitution and at the end of 1989 offered his own draft. However he didn't live to see and to hear discussions. He died on December 14, 1989.

Ex. 1. Give the English equivalents:

Вклад (содействие), научно-исследовательский институт, полноправный член, комитет по правам человека, отстранить, проводить ядерные испытания, защитить диссертацию, предложить свой проект, в мирных целях, лишить правительственных наград, испытательная зона, задачник, управляемый, завоевать почет и славу, высокая оценка, непрерывная работа, выдающийся ученый, злоупотребление властью (превышение власти), с отличием, наградить Нобелевской премией, сторонник, назначать, термоядерное оружие, осуждать, посвящать, приводить к, задерживать (арестовывать), водородная бомба, высылать (из страны), доверять (поручать), сила воли, ядерный взрыв.

Ex. 2. Answer the questions:

1. Did A. Sakharov enter Physics Department of the Moscow University?
2. When did he defend his thesis?
3. In 1948 A. Sakharov was included into the special group working out thermonuclear weapon, wasn't he?
4. Why was he called "the father of thermonuclear bomb"?
5. What was the main task of the scientist and what was he committed to?
6. What did A. Sakharov receive several governmental awards for?
7. Why did A. Sakharov refuse to spend the rest of his life in wealth and respect of his countrymen?
8. What book was translated into several languages and published abroad?
9. When was he awarded the Nobel Prize?

Ex. 3. Complete the dialogue:

– Do you agree that A. Sakharov is not only a prominent scientist but a great human being?

– ……. .
– ……. . ?
– A. Sakharov made a protest and organized a press-conference where he condemned actions in Afghanistan.

– What did A. Sakharov get a deep appreciation abroad for?
– ……. .

II. David Suzuki is an internationally known environmental activist and scientist. Although he is well known for his radio broadcasts in Canada, he's become an international celebrity through the television show *The Nature of Things*. Suzuki also cofounded the David Suzuki Foundation for the promotion of living in balance with the natural world.

David Suzuki was born on March 24, 1936 in Vancouver, Canada to Kaoru Carr and Setsu Suzuki. Suzuki and his twin sister Marcia were grandchildren of Japanese immigrants who came to Canada in the early part of the 20th century. Because of his birth, Suzuki with his family was sent to an internment camp in British Columbia during the Second World War. The family was released at the end of the war.

After finishing his preliminary education, Suzuki left Canada to study at Amherst College in Massachusetts where he earned his B.A., followed by his Ph.D. in zoology from the University of Chicago. He graduated in 1961 and began his career by studying genetics. In 1963 he returned to Canada to teach with the zoology department at the University of British Columbia. He worked as a professor for almost forty years.

In 1979 Suzuki began hosting what would become his most well-known program called *The Nature of Things* to stimulate broader interest in nature, wildlife, and a more sustainable society. In 2002 Suzuki created a mini-series for Canada public television called *the Sacred Balance* and continues to promote sustainable practices and respect for nature through his talks and media outlets.

Suzuki established the David Suzuki Foundation to implement a carbon neutral energy program by purchasing carbon offsets from renewable energy and energy efficient projects.

Suzuki remains outspoken about the human-involvement in climate change and society's lack of action to change practices. At times he has accused certain scientists of speaking against climate change in order to lobby for oil and energy companies. Although some of his speeches have been controversial, Suzuki has amassed a following of companies and individuals who share in his work and beliefs.

Ex. 1. Give the English equivalents:

Выполнять, осуществлять; топливно-энергетические предприятия; фонд; доктор философии; бакалавр гуманитарных наук; выступление в средствах массовой информации; продолжать открыто говорить; живая природа; химическая чистка; энергопотребление с нулевым балансом выбросов углерода; возобновляемый источник энергии; естественное

существование; жить в равновесии с; радиопередача; приобретать углеродные зачеты (т. е. приобретение разрешения на промышленные выбросы углекислого газа); спорный; предварительная подготовка; экологически рациональный; собирать; изменение климата; являться соучредителем; содействие, поддержка, продвижение; мнение, суждение; проект по энергосбережению; лагерь для интернированных; знаменитость; трудовой лагерь; освобождать; практика, деятельность.

Ex. 2. Answer the questions:
1. Is David Suzuki a well-known environmental activist and scientist?
2. Where did David Suzuki spend his childhood?
3. What degrees did he earn in Massachusetts and Chicago?
4. What career did he begin after graduation?
5. Why did he return to Canada in 1963?
6. How is his most well-known program called?
7. What did David Suzuki create for Canada public television?
8. Why has he accused certain scientists of speaking against climate change?
9. What is the David Suzuki Foundation activity aimed at?
10. Why has David Suzuki become an international celebrity?

Ex. 3. Complete the dialogue:

– I have recently come across some interesting name. Have you ever heard of David Suzuki?
– …….. .
– ……. . ?
– Yes, but he is known not only for his radio broadcasts in Canada. His television show *The Nature of Things* is also very popular.
– Do you know anything of David Suzuki Foundation?
– ……. .

III. Academician **Alexandr Mitrofanovich Terpigorev** (1873–1959) is a well-known mining engineer who successfully combined his practical experience with scientific research. He was born in 1873 in Tambov. In 1892 he finished school with honours and decided to get a higher education. He chose the Mining Institute in St. Petersburg and passed all the entrance examinations successfully.
At the Institute he studied the full range of subjects relating to metallurgy, mining and mining mechanics. At the time students' specialization was based on descriptive courses and elementary practical training. One of the best lecturers was A.P. Karpinsky. His lectures on historical geology were very interesting.

During his practical training A.M. Terpigorev visited mines and saw that the

miner's work was very difficult. In the Donbas he collected material for his graduation paper to be defended. It dealt with the mining of flat seams in the Donbas.

In 1897 A.M. Terpigorev graduated from the Institute and was awarded a first-class diploma and the degree of mining engineer.

His first job as a mining engineer was at the Sulin mines where he was working for more than three years first as an assistant manager and later as a manager.

From 1900 to 1922 A.M. Terpigorev was working at the Yekaterinoslav Mining Institute (now Dnepropetrovsk Mining Institute). Then he accepted an offer to take over the Mining Chair at Moscow Mining Academy and moved to Moscow. From 1930 he headed the chairs of Mining Transport and Mining of Bedded Deposits at Moscow Mining Institute.

Academician A.M. Terpigorev took a particular interest in mine safety. As a result of his investigations in the Donbas A.M. Terpigorev worked out safety measures in gassy collieries. For a long time he was working at the problem of fire damp, the most harmful and dangerous of all the gases in mine air.

His two-volume work Coal Mining and Mining Transport Facilities is a complete description of the mechanization and the economy of the Donbas. His works deal with mining transport facilities, mechanization of coal mining and mining machinery. He is one of the pioneers in scientific methods of coal gasification.

A.M. Terpigorev received government awards for his activities many times. Academician A.M. Terpigorev and other prominent scientists made a great contribution to the development of mining. They laid the foundation of the Russian mining science.

Vocabulary Notes:

flat seam – горизонтальный пласт, пологий пласт
take charge (of) – принять управление, возглавить что-л.
bedded deposit – напластованное (осадочное) месторождение;
gassy colliery [~'kɔljərɪ] – газосодержащий угольный рудник; шахта
fire damp – рудничный газ, метан
Donbas – Donets Basin Донецкий угольный бассейн (на территории Донецкой и Луганской областей Украины, Ростовской области России; сокращённо – Донбасс)
lay the foundation for (или of) smth. – заложить основы чего-л.

Ex. 1. Give the English equivalents:

Получить правительственные награды; горный инженер; добыча угля; меры безопасности; месторождение; внести огромный вклад;

защитить дипломную работу; помощник управляющего; принять предложение; возглавить; выдающийся ученый; горное оборудование; шахта; положить начало чему-то; метан.

Ex. 2. Answer the questions:
1. Academician A.M. Terpigorev is a well-known mining engineer, isn't he?
2. What did he successfully combine?
3. What Institute did he choose to study at?
4. What did A.M. Terpigorev visit mines for?
5. What was the theme of his graduation paper?
6. Where did A.M. Terpigorev work as a mining engineer?
7. Why did he move to Moscow?
8. What chair did A.M. Terpigorev head at Moscow Mining Institute?
9. What particular interest did academician A.M. Terpigorev take in?
10. What great contribution did academician A.M. Terpigorev along with other prominent scientists make?

Ex. 3. Make up a story about one of the famous people in your field.

Ex. 4. Answer the following questions:
1. What is the prominent scientist of your field famous for?
2. What are you personally interested in?
3. What is your research / study concerned with?
4. What do you want to reach in your profession?

UNIT V. MY FUTURE CAREER

Study the Vocabulary

academic qualifications [ˌækə'demɪkˌkwɔlɪfɪ'keɪʃ(ə)ns] *зд.* учебные характеристики
acknowledgement [ək'nɔlɪʤmənt] *n* уведомление о получении
advertisement (ad) [əd'vɜ:tɪsmənt] *n* реклама
be desperate (for) [bi:'desp(ə)rətfɔ:] *v* быть в отчаянии (из-за)
bin [bɪn] *v* выбрасывать (в мусор)
choir ['kwaɪə] *n* хор
civil liberties ['sɪv(ə)l 'lɪbətɪəs] гражданские свободы
complaint [kəm'pleɪnt] *n* жалоба
contribute (to) ['kɔntrɪbju:t tu] *v* вносить вклад (в), содействовать
conversely ['kɔnvɜːslɪ] *adv.* наоборот

curriculum vitae (CV) [kə,rɪkjələm 'vi:taɪ/'vaɪti:] краткая биография, резюме
deadline ['dedlaɪn] *n* конечный (крайний) срок

deter [dɪ'tɜ:] *v* удерживать, отпугивать

distinctive [dɪ'stɪŋktɪv] *a* ясный, чёткий
eagerly wait ['i: gəlɪ weɪt] с нетерпением ожидать

enjoy [en'ʤɔɪ] *v* наслаждаться, получать удовольствие

exception [ɪk'sepʃ(ə)n] *n* исключение

fashionable ['fæʃ(ə) nəbl] *a* модный

favoured ['feɪvəd] *p.p. from favour* предпочтительный
flexible ['fleksəbl] *a* гибкий
graduate ['grædjuɪt] *n* выпускник
govern ['gʌv(ə)n] *v* управлять
high profile [haɪ'prəufaɪl] *a* видный, известный
interdependent [,ɪntədɪ'pend(ə)nt] *a* взаимозависимый

illegible writing [ɪ'leʤəbl 'raɪtɪŋ] неразборчивый почерк

invitation [,ɪnvɪ'teɪʃ(ə)n] *n* приглашение

law society [lɔ:sə'saɪətɪ] *зд.* юридический кружок

leisure activities ['leʒə æk'tɪvətɪs] занятия в свободное время

look for [lukfɔ:] *v* искать
major ['meɪʤə] *a* крупный

marketing research ['mɑ:kɪtɪŋrɪ'sɜ:ʧ] исследование рынка
media law ['mi:dɪə lɔ:] законодательство в области СМИ
memo ['meməu] *n* (сокр. от memorandum) служебная записка

mutually ['mju:ʧuəlɪ] *adv* взаимно
obtain [əb'teɪn] *v* получать
personnel monitoring [,pɜ:s(ə)'nel 'mɔnɪt(ə)rɪŋ] управление кадрами
persuade [pə'sweɪd] *v* убеждать

realize ['rɪəlaɪz] *v* сознавать

rejection [rɪ'ʤekʃ(ə)n] *n* отказ
replay [,ri:'pleɪ] *n* ответ

responsibility [rɪ,spɔn(t)sə'bɪlətɪ] *n* ответственность

senior (Snr, Sr.) ['si:nɪə] *a* старший

sought-after [sɔ:t 'ɑ:ftə] *a* пользующийся успехом
Ltd (Ltd – сокр. от limited) компания с ограниченной ответственностью
subject smth. to ['sʌbʤekt 'sʌmθɪŋtu:] *v* подчинить что-либо чему-либо

the only [ðiː 'əunlɪ] единственный
to date [tu 'deɪt] к настоящему времени
transfer [træn(t)s'fɜː] *v* переносить, перемещать

Pre-text exercises:
Ex. 1. Translate the words, paying attention to the meaning of prepositions.
of: the pressure of power, to speak of something, one of them;
to: to show to the students, to go to the interview, to turn to the right;
by: to operate by hand, to speak by telephone, by means of the research, to sit by the window; *with:* to illustrate with tables, to write with a pencil, a form with questions, to speak with our friends;
about: to speak about the lecture, to do about 15 questionnaires;
in: in time, in a few days, in terms of, in a different way.

Ex. 2. Insert the right preposition (*of, to, with, by, about, by means of, in*).
1. Mr. Hall delivers lectures … the students of a technical college. 2. I'll start … a few days. I don't feel like it now. 3. He always comes … his work … time. 4. The students always try … make experiments … their own hands. 5. Laboratories and workshops are equipped … up-to-date instruments, computers, machine-tools, audio-visuals and other training appliances. 6. Mr. Hall tries … illustrate his lectures … numerous tables and figures. 7. There is something interesting … the properties of this respondent group … this scientific paper. 8. We attach one new characteristic … the marketing group by means of an analytical survey. 9. … some experiments the lecturer illustrates the measurements of social tension. 10. Today, more than ever, war is an evil and completely indefensible … human morals or civilization. 11. You express what they have said or written … a different way. 12. The required and optional subjects give a solid basis … general education … future specialists. 13. We are taught to carry out a public opinion poll, to deal … managerial systems, advertisement and mass media.

TEXT 1. ***My Speciality: Technological Peat Machines and Equipment***

I am a second year student of the nature management and engineering ecology department of Tver State Technical University. My speciality is a mechanical engineer dealing with peat machines and equipment. It refers to the construction and design of equipment for peat deposits development.

Peat has industrial significance as fuel for energy production and an important raw material for agriculture. Large areas of organic wetland (peat) soils are drained for agriculture, forestry and peat extraction.

Nowadays peat industry is highly-mechanized. Different kinds of machines and mechanisms are used at peat enterprises to help people to eliminate manual

labour. The first peat machine students begin to study is a tractor. Tractors are widely used in peat industry. A tractor suitable for peatery has common elements such as a motor, a tractor body with a gear box, steering equipment and caterpillar elements. Working equipment by means of which the tractor performs different jobs includes the PTO, pulleys, trailing and mounted implements, etc.

Peat machines are driven and pulled by a caterpillar tractor. The peat machines are designed for work on high bogs with low specific ground pressure and equipped with air cooled diesel engines and hydraulic power transmission. The motor type of the peat machine is an air cooled diesel engine which eliminates cooling water and freezing risk in winter. The air cooled diesel engine is used in the majority of peat machines and also in excavators, locomotives and machines of special design. Up to date peat machines involve ditchers, drainage machines, loaders, harrows, harvesters, excavators and many others.

So along with general subjects students study special subjects such as descriptive geometry, engineering graphics, strength of materials, engineering mechanics, materials science, theory of machinery, electrical engineering and electronics, water-driven machines, peat field and exploring, peat mechanics, peat machine designing, peat dehydration methods, conveyor transport, and maintenance of peat machines. As for me, I hope to master a profession and have a good head for different machines and, namely, a peat producing machinery complex.

Vocabulary Notes:

peat machine торфяная машина
gear box коробка скоростей
specific ground pressure удельное давление на грунт
air cooled diesel engine двигатель с воздушным охлаждением
steering equipment рулевое управление
hydraulic power transmission гидравлическая подача энергии
caterpillar гусеница, гусеничный ход
ditcher канавокопатель
PTO- power take off вал отбора мощностей
pulley шкив
trailing and mounted implements буксирное и подъёмное оборудование
harrow борона
harvester уборочная машина
loader погрузчик
efficiency of the motor КПД двигателя
tracks (pl) гусеничный ход

Ex. 1. Answer the questions:

1. What department do you study at? And what is your future profession?
2. What is the first peat machine students begin to study?
3. What elements does the tractor have?
4. What are peat machines driven and pulled by?
5. What must tracks provide?
6. What kind of engine are peat machines equipped with?
7. Where is the air cooled diesel engine used in?
8. What peat machines do you know?
9. What special subjects do students study?

TEXT 2. *My Speciality: Environmental Engineering*

Let me introduce myself. I am a second-year student of the Nature Management and Engineering Ecology Department, my future speciality is environmental engineering. After graduating from Tver State Technical University I will be an ecologist. I consider my future profession very important and urgent nowadays.
Ecology is the science that studies the conditions of the habitat of man, animals and plants for the benefit of present and future generations. Human activities and the application of new technological processes have made the environment unhealthy. Overpopulation, pollution and energy consumption have created such planet-wide problems as massive deforestation, ozone holes, acid rains and global warming which is believed to be caused by the greenhouse effect. Air and land pollution is a very serious problem in cities. Industrial enterprises and cars emit tons of harmful substances: fumes, gases and liquids polluting air and land causing damage to people and living creatures.

So, our main task is to solve the problems of urban environment: to form a city with ecological buildings and engineering structures, functional and attractive landscape, ecologically effective industry, transport and power system, that is the ecologically balanced city. The solution of these problems depends on a sound ecological education of specialists.

At the University we study a lot of various subjects which will be necessary in my future profession. They are ecology, soil science, climatology, geology, land surveying, landscape design, and agriculture. Much attention is paid to practical training. After graduation we will work at different enterprises: plants, factories, firms and research laboratories.

We study and get ecological education, take part in different green parties and organization activities. Perhaps, acting jointly we will be able to avoid the disaster that threatens the world. I consider we must do our best to protect and save our beautiful planet. That is why I have chosen such a speciality.

Vocabulary Notes:

urban environment городская среда
sound качественный, основательный, прочный
land surveying геодезия

Ex. 1. Answer the questions:
1. What department do you study at?
2. Why did you choose this major?
3. What special subjects do you study at the University?
4. What do you parents want you to be? Do they approve of your choice?
5. Do you think you have enough talents and qualities for your future profession?
6. Where will you be able to work after graduation?
7. What do you think about the future prospects for your speciality?

Ex. 2. Translate the dialogue into English and act it out.
– Привет ……., что ты здесь делаешь?
– Привет ……., я жду подругу.
– Я слышал, что ты заканчиваешь учебу этим летом. Это правда?
– Да. Если все будет хорошо, я получу степень бакалавра в августе. Потом мне надо начать поиски работы.
– Я занимался этим в прошлом году. Это было нелегко. У тебя есть какие-либо предложения со стороны работодателей?
– Нет, еще нет. Я разослала несколько резюме, но не получила ответов. Сейчас очень трудно найти работу.
– Какая у тебя специализация?
– Экология.
– Это было моей специализацией, когда я поступил в колледж, но после первого года я перешел на горную инженерию.
– Я думаю, инженерам легче найти работу.
– Я не уверен насчет этого. Мне потребовалось 3 месяца, чтобы найти работу. В конце концов, я получил работу, когда разместил свое резюме на одном из сайтов по поиску работы.
– Тем не менее, это не играет большой роли. Если я не смогу найти работу, наверное, поступлю в магистратуру.

Ex. 3 Translate into English:

Загрязнение окружающей среды – очень серьезная проблема. Моря, реки, леса и луга наполнены различными ядами промышленных и ядерных отходов, химических удобрений и пестицидов. Каждые десять минут один вид животных, растений или насекомых погибает навсегда. Промышленные предприятия испускают тонны вредных веществ.

Эти выбросы приводят к парниковому эффекту и кислотным дождям.

Атомные электростанции производят опасные ядерные отходы, решение проблемы захоронения которых так и не найдено. Мы знаем о последствиях Чернобыльской катастрофы и разрушающей силе взрыва на японской атомной станции Фукусима-1.

Глобальные экологические проблемы могут быть решены только совместными усилиями мирового сообщества. Поэтому необходимо разработать международную программу по защите окружающей среды.

Grammar Revision

Translate into Russian, paying attention to non-finite forms:

1. The poisoning of land, air and water leads to the dangerous illnesses of civilization. 2. Poisoning of land, air and water people must think of the dangerous consequences. 3. Overpopulation, pollution, energy consumption is known to have created massive deforestation, ozone holes and acid rains. 4. The global warming is believed to be caused by the greenhouse effect. 5. Environmental protection must become a very serious problem. 6. The tragic consequences of the Chernobyl disaster must have become one of the serious questions of the conference. 7. Nuclear power stations seem to be an ever greater environmental threat. 8. We know industrial enterprises to emit tons of harmful substances. 9. The seas reported to be in danger are filled with poison. 10. Once started, the pollution of air and water is difficult to stop.

TEXT 3. ***The Art of Job Application***

Summarize the main idea of the story in 5-8 sentences. What useful information did you find in the text?

by Caroline Turner

Now is the time when students eagerly await for the phone call of whether they have got a contract. To have a contract it is necessary to write an application letter properly and be successful at an interview. Rather late, I wrote 28 applications for contracts. Most firms stopped accepting applications by September, so I could write only to those few whose deadlines had not passed, or whom I hoped to persuade to make an exception.

Fashionable small firms get as many, or more, applications than the major City firms. For example, Stephens Innocent Ltd, which takes on only one trainee per year, has had about 2,000 applications, the same number as Clifford Chance Ltd, the largest firm, with 120 places on offer.

Nicola Salomon, a partner at Stephens Innocent Ltd, says that the high numbers of the applying do not surprise her because the firm is high profile and works in

a sought-after area – health, safety & environment law. Ms. Solomon says she rejects anyone who has illegible writing and letters longer than one page. She looks for people with professional experience rather than those straight out of college.

Ian Bloom, of Bloom Camilling Ltd who had 400 applications for two places looks for something distinctive in the application which must be well written. The worst ones might say: "Do not bin this, I'm desperate for a job". Others are too knowing, and might say: "Everyone on planet Earth has told me that you are the only firm worth applying to", but when asked who recommended the firm, they cannot answer.

Some recruitment administrators say they look for good academic qualifications and responsibility, such as running the University Law Society or being captain of a basketball team. It could be anything from a sports team to a choir. Conversely, a person's hobbies may indicate that he or she is a loner, not a leader. The long, complex application forms favoured by some of the larger firms do not deter many applicants despite the big blank spaces left for questions such as "Why do you want to work for us?" and "What are your greatest achievements to date?", "What experience was the most rewarding and why?".

Some interviewers make the applicants state their "principal interest and leisure activities" and how they contribute to and benefit from them.

In response to my 28 applications I have had six acknowledgments, four letters saying I am too late, five rejections and two invitations for interviews – one for a major firm and one for a small, specialist firm.

Ex. 1. Read the following advice how to make successful career and add some of your own.

1. Set goals and strive to reach them by specific deadline dates.
2. Learn to listen. Instead of rushing headlong into a project be professional enough to listen to instructions carefully and to heed the advice of others.
3. Learn to say "no" without feeling guilty. Instead of punishing yourself for wasting time give yourself reward each time you manage your time wisely.
4. Avoid meetings whenever possible. If you must have a meeting, prepare a specific agenda ahead of time and stick to it.
5. Make up a daily schedule before going to bed. Stick to your plan every day.
6. Link errands together. Instead of four trips a day, go out just once.
7. Learn from your mistakes and don't repeat them.
8. Anticipate change, prepare for it and adapt quickly when it comes.
9. Learn to make a decision – to lead, to follow or to get out of the way.

TEXT 4. ***Job Interview***

When a job is advertised, there are often a lot of people interested in applying. Sometimes a company receives hundreds of resumes for a single job opening. The job interview, therefore, is very important.

Because job interviews are so critical, some job hunters read books or take courses to help them make a good first impression. These books are full of advice to help job applicants prepare for their interviews. For example, successful applicants dress appropriately and have a clean and neat appearance. They take their resume with them to the interview. They are to prepare questions about the job or the company. They go to the interview alone and are always on time.

At the beginning of the interview, the applicant shakes hands firmly with the employer. The employer usually invites the applicant to sit down. During the interview it is appropriate to smile often and to look directly into the eyes of the interviewer. The applicant doesn't chew gum or smoke during the interview. The applicant is prepared to answer questions about education and previous jobs. More difficult questions are possible, such as "Why did you leave your last position?". They ask questions about applicant's personal background, family, and hobbies. Interviewers expect applicants to talk profoundly, confidently, and fully about their work experience, skills, goals, and abilities. When the interview is over, the applicant stands up, shakes hands with the interviewer(s), and says thank you for the time spent.

Job applicants who can show they are capable, well-prepared, punctual, polite, and honest have a better chance of getting the job they are looking for.

Ex. 1. Answer the questions on the text:
1. What is taken into consideration in a job interview?
2. How can you be competitive with other job-seekers in your field?
3. Do you think there is association between an individual’s nature, appearance and occupation?
4. What do interviewers usually ask applicants in a job interview?
5. What do interviewers expect from applicants?
6. Who has the best chance of getting the job?

Ex. 2. You are interviewed by the representative of the company. Please, answer his questions.
Representative of the company: Why are you interested in joining our company?

You: …….
R.: What are you by profession?
Y.: …….

R.: What is your professional experience?
Y.: …….
R.: What do you know about this company?
Y.: …….
R.: What kind of position do you want?
Y.: …….
R.: What is your marital status?
Y.: …….
R.: What are your main strengths for this job?
Y.: …….
R.: Will you agree to begin with a part-time job?
Y.: …….
R.: What is your objective? What kind of position do you want in the future?
Y.:…….

Ex. 3. Prepare questions you may wish to ask:

Organisation	*Colleagues*
Major current projects	Who would you work with
Future development projects	
Work	*Salary*
Responsibilities and obligations	Chances of progression
Typical work timescales	Net and gross salary
Variety of work	Other benefits
To whom to report	
Location	*Training*
The place to be based	Training offered
How much travel/mobility	Help with professional qualifications

Ex. 4. Read and translate this application letter and curriculum vitae and make your own variant. Mind the rules of making up the letter.

20, Bright Street
Edinburgh
May 24, 2012

Recruitment and Training Manager
W. &T. Marketing Services Limited
21, Conduit Street
London W.I
England

Dear Sirs,

In reply to your advertisement in today's "The Daily Telegraph" I am interested

in becoming an environmental auditor for your company.

As you can see from the enclosed curriculum vitae, I have some previous experience in various and very competitive fields of bioecology products sales. However, I would like to change to analytical work in the sphere of marketing research since I believe this can offer a greater potential to me. Your ten months training scheme should, certainly, help me to devote my ability to your company particularly since my educational qualifications are higher than those you require.

I thank you for considering my application. I'm looking forward to a face-to-face meeting.

Yours faithfully,
Peter S. Green.

Enc. Curriculum Vitae:

Name:	Peter S. Green
Home address	20, Bright St Edinburgh 48104 UK Mobile Phone +44 131 694 0921 Prior Work Phone +44 131 975 3542 (mornings)
Experience	2010 / 20012 Analyst-assistant of BioEcoGroup Sales, Edinburgh
Prior Education	1. B.A., Economics, Pomona College, 2000 2. M.A., Nature Sciences and Economics, University of Michigan, 2005

Ex. 5. Read and translate one more letter of application. Make up similar one of your own.

To whom it may concern:

I venture to write you to inquire whether your Department may allow me a post-graduate course this year.

I am a graduate at Yale University where I specialized in biochemistry.

I enclose my data sheet and two references, I should be glad if you could consider my application.

Yours faithfully, … .

Ex. 6. Say what kind of business information the stated below fragments refer to
– CV;
– Contract;
– Letter of apology;

– Letter of complaint.

1) ……..

I am writing in connection with the above invoice for an MX3 Facsimile machine. We received this machine yesterday.

Unfortunately, the power cable is missing.

We would be very grateful if you could send one as soon as possible. …….

(From Company to Company by A. Littlejohn)

2)……

I have enclosed my resume, and I would like to schedule an interview. I'll call you next week.

I look forward to meeting you.

…….

(From Business Correspondence by L. Loughheeds)

Ex. 7. Remember the sender's and addressee's layout on the envelope.

Имя и фамилия ***отправителя*** номер дома, квартиры, название улицы, город, штат, почтовый индекс, страна	Марка
Имя и фамилия ***получателя*** номер дома, квартиры, название улицы, город, штат, почтовый индекс, страна	

Ex. 8. Correlate the enumerated information on the envelope with the explanation under it.

(1) Design Plus, Co
55 (2) Stevenson Road
(3) San Francisco, CA 94015

(4) Mr. P.T. Vitale
(5) Mutual Insurance Company
33 South Street
New York, (6) NY 3476

_____ the street name in the return address
_____the town the letter comes from
_____the sender's name
_____the addressee
_____the addressee's company name
_____the ZIP Code in the mailing address

UNIT VI. CHECK YOURSELF

1. School vocabulary
Fill the gap:
_____methods include lectures, tutorial and seminars.
a) Teaching b) Technological c) Innovative d) Conferencing

2. Practical vocabulary
Fill the gap:
Would you like a single or a _____room?
a) nice b) suitable c) double d) business

3. Professional vocabulary
Fill the gap:
The chemically unstable oxygen-rich _____ characterizes our planet.
a) atmosphere b) hydrosphere c) lithosphere d) biosphere

4. Terminology / definitions
Fill the gap:
_____ can be defined as any situation where there is interaction between organisms and their environment.
a) Ecosystem b) Habitat c) Pollution d) Acid rain

5. Word-building
Fill the gap:
The _____ of Stonehenge began about 5,000 years ago.
a) Rebuild b) builder c) built d) building

6. Pronouns
Fill the gap:
_____ covers the largest part of the Earth’s surface?
a) Where b) Who c) What d) Why

7. Degrees of comparison of adjectives
Fill the gap:
He had to take off as _____ as possible.
a) sooner b) soonest c) more soon d) soon

8. Articles
Fill the gap:
Alan's father is furious because he has had _____ accident with his new car.
a) any b) an c) – d) a

9. Prepositions
Fill the gap:
They are not having their holidays _____ this year.
a) at b) in c) – d) on

10. Conjunctions
Fill the gap:
Our planet is in grave danger _____ human activity.
a) but b) because of c) or d) for

11. Tense forms of the verb
Fill the gap:
After I _____ the letter, I started to cry.
a) were reading b) has read c) had read d) am reading

12. Non-finite forms
Fill the gap:
I am thinking of _____ Ann to a nursery school.
a) sending b) having sent c) to have sent d) to send

13. Phrasal verbs
Fill the gap:
I can't hear you. Please _____!
a) speak off b) speak across c) speak over d) speak up

14.Modal verbs
Fill the gap:
Brothers and sisters _____ to take care of each other.
a) must b) can c) ought d) are able to

15.Speech etiquette / life-style sphere
Choose the statement appropriate to the situation:
Friend: " _____"
You: "Fine".

a) Sorry. I need to make a phone call.
b) Would you excuse me, please? I'd like to make a phone call, if you don't mind.
c) I wonder if I could make a phone call.
d) What is your telephone number?

16.Professional practical sphere
Choose the statement appropriate to the situation:
Driver: "Yes?"
Police Officer: " _____"
a) You'd better switch off you engine.
b) Switch off your engine.
c) Could you switch off your engine please, sir?
d) You must switch off your engine immediately.

17.Speech etiquette / school social sphere
Choose the statement appropriate to the situation:
Student: " _____"
Teacher: "Yes, certainly. So …"
a) Could you repeat that, please?
b) Say it again.
c) What?
d) Slow down!

18.Speech etiquette / social practical sphere
Choose the statement appropriate to the situation:
Clerk: "Good morning."
Customer: "_____"
a) Change this money into dollars.
b) You should change some Swiss francs into dollars.
c) Good morning. Can I change some Swiss francs into US dollars, please?
d) I want to change this money into dollars, will you?

19.Culture and traditions / Great Britain
Fill the gap:
St. Paul's Cathedral, the greatest monument and Wren's masterpiece, is situated in _____.
a) Liverpool b) Manchester c) London d) Oxford

20. Culture and traditions / The USA
Fill the gap:
There are _____ stars on the USA flag.
a) 50 b) 49 c) 51 d) 47

21. Culture and traditions / Canada
Fill the gap:
The capital of Canada is _____.
a) Toronto b) Washington c) Ottawa d) Quebec

22. Culture and traditions / outstanding people
Fill the gap:
The first woman Prime Minister in Britain was _____.
a) Elizabeth II b) Margaret Drabble c) Margaret Thatcher d) Charlotte Bronte

23. Reading

Read the text and do the assignments

TEXT. ECOLOGY

1. Ecology is the scientific study of the distribution and abundance of living organisms and how the distribution and abundance are effected by interactions between the organisms and their environment. The environment of an organism includes both physical properties, which can be described as the sum of local abiotic factors such as insolation, climate, and geology, and biotic factors, which are other organisms that share its habitat.

2. Ecology is usually considered a branch of biology, the general science that studies living organisms. Organisms can be studied at many different levels, from proteins and nucleic acids, to cells, to individuals, and finally at the level of populations, communities, and ecosystems, to the biosphere as a whole.

3. Ecology is a multidisciplinary science. Because of its focus on the higher levels of the organization of life on earth and on the interrelations between organisms and their environment, ecology draws heavily on many other branches of science, especially geology and geography, meteorology, genetics, chemistry, and physics. As a scientific discipline, ecology does not dictate what is right or wrong. However, ecological knowledge such as the quantification of biodiversity and population dynamics have provided a scientific basis for expressing the aims of environmentalism and evaluating its goals and policies.

4. Consider the ways an ecologist might approach studying the life of honeybees:

− the behavioral relationship between individuals of a species is behavioral ecology, for example the study of the queen bee, and how it relates to the worker bees and the drones;

− the organized activity of a species is community ecology; e.g., the activity of bees assures the pollination of flowering plants. Bees hives additionally produce honey which is consumed by other species, such as bears;

− the relationship between the environment and a species is environmental ecology, for example bees may die out due to environmental changes.

(From Wikipedia)

Define what statement is appropriate to the context:
a) Ecology helps environmentalists to evaluate their policies of nonintervention.
b) Ecology, as a scientific discipline, does not state what is wrong and what must be done.
c) Ecology focuses on studying abundance of living organisms.
d) Ecology studies only endangered species.

24. The same text, define what statement is not appropriate to the context
a) Ecology helps environmentalists to express their aims and evaluate their goals and policies.
b) The environment of an organism includes mainly biotic factors.
c) Ecology focuses on the higher levels of life organization.
d) Ecology studies could address endangered species.

25. Choose the correct response to the question: What does the environment of an organism include?
a) It is the sum of other organisms.
b) It includes physical properties.
c) It consists of abiotic and biotic factors.
d) It comprises the local climate.

26. Which part of the text (1, 2, 3, 4) the following information corresponds to:
Living organisms can be studied at different levels.

27. Which part of the text (1, 2, 3, 4) the following idea corresponds to: Ecology is supported by many different sciences.

28. Define the main idea of the text:
a) Ecology provides us with an interdisciplinary analysis of ecological systems.
b) Ecology studies organized activity of species on our planet.
c) Ecology is a branch of biology.
d) Environmental changes may cause the death of species.

29. Writing / Business Letter
Put the parts of the business letter in the right order:

	316 Anderson Road, Gables, Florida 33134
	Sincerely yours, _____ Wane Brooks
	Dr. Ralph Carson, 55 Chapel Street, Newtown, Massachusetts 02160
	I am writing in connection with your advertisement for the post of lab assistant in yesterday's Daily.
	Dear Dr. Carson:
	May 16, 2004

30. Writing / Envelope Form
Correlate the enumerated information on the envelope to the explanation under it:

(1) A & P Accountants
4563 Presley Avenue
Memphis, (2) Tennessee 50647

(3) Tech Tools, Inc.
(4) 3553 Johnson Avenue
(5)Houston, Texas (6) TX

_____ The sender's company name
_____ The house number in the mailing address
_____ The ZIP Code in the mailing address
_____ The addressee's company name
_____ The state the letter comes from
_____ The town the letter is sent to

31. Writing / Types of documents
Define what kind of business information the stated below fragment refers to:

……

In our telephone conversation yesterday, we discussed plans for our meeting at your conference centre. I would like to confirm these plans.
The meeting will be from March 15th to the 17th. We will need two rooms. Eighty will attend the meeting.

I would like to thank you for your help in planning our meeting.

(From Business Correspondence by Lin Lougheeds)

……

a) Contract
b) Simple commercial letter
c) CV
d) memo

32. Writing / memo, e-mail, fax, agenda
Fill the gaps
To : (1) _____, Export Sales Dept
(2)_____: Cristina Barrios, Technical Dept
(3)_____: Huanita
Date : 18 July 2005

The cost of repairs to the bottling machine at the Huanita Factory in Mexico is estimated at US $3,400. Please write to Mr. Sanchez that their present bottling machine is very old and it is better for them to buy a new one.

(4)_____

___From ___Tony Smith ___Subject ___C.B.

UNIT VII. SUPPLEMENTARY TEXTS

(for individual translation)

1. MINING OPERATION

Mining engineers working in an established mine may work as an engineer for operations improvement, further mineral exploration, and operation capitalization by determining where in the mine to add equipment and personnel. The engineer may also work in supervision and management, or as an equipment and mineral salesperson. In addition to engineering and operations, the mining engineer may work as an environmental, health and safety manager or design engineer.

The act of mining required different methods of extraction depending on the mineralogy, geology, and location of the resources. Characteristics such as mineral hardness, the mineral stratification, and access to that mineral will determine the method of extraction.

Generally, mining is either done from the surface or underground. Mining can also occur with both surface and underground operations taking place on the same reserve. Mining activity varies as to what method is employed to remove the mineral.

(827 characters)

2. REHABILITATION

After mining finishes, the mine area must undergo rehabilitation. Waste dumps are contoured to flatten them out, to further stabilize them. If the ore contains

sulfides it is usually covered with a layer of clay to prevent access of rain and oxygen from the air, which can oxidase the sulfides to produce sulfuric acid, a phenomenon known as acid mine drainage. This is then generally covered with soil, and vegetation is planted to help consolidate the material. Eventually this layer will erode, but it is generally hoped that the rate of leaching or acid will be slowed by the cover such that the environment can handle the load of acid and associated heavy metals. There are no long term studies on the success of these covers due to the relatively short time in which large scale open pit mining has existed. It may take hundreds to thousands of years for some waste dumps to become "acid neutral" and stop leaching to the environment. The dumps are usually fenced off to prevent livestock denuding them of vegetation. The open pit is then surrounded with a fence, to prevent access, and it generally eventually fills up with ground water. In arid areas it may not fill due to deep groundwater levels. Waste rock is piled up at the surface, near the edge of the open pit. This is known as the waste dump.

(1079 characters)

3. RATIONAL USAGE OF NATURAL RESOURCES IN THE OPEN PIT EXPLOITATION AREAS

The growth of the coal mining industry negatively affects the natural environment. The open pit mining represents an act of real aggression on the environment which leads to erosion processes and to a high pollution caused by suspended and deposit particles. The damaged soil should be rehabilitated to avoid corrosion processes.

One of the most obvious acts of aggression on the environment is the degradation of the landscape as a result of exploiting and processing the raw material for obtaining the final product, the coal.

Environment pollution determined by the coal exploitation could represent a serious threat to the population state of health from the communities situated nearby to the exploitation areas. The exploitation and the coal burning are the main environmental source of pollution in many world countries.

Another major problem that arose because of coal mining is related to the registered changes in the structure of soil use. The analysis shows that the region of agricultural fields has been reduced. Coal mining has also an influence on the underground water resources and especially on the rain water draining regime.

(965 characters)

4. RUNWAY RUNOFF

During the winter, a medium-size airport uses approximately 264,000 gallons of de-icing fluid on commercial airplanes. This fluid, usually ethylene glycol and propylene glycol with flame- and corrosion-retardant additives, is not regulated

and its runoff pollutes waterways near many airports. As worldwide air travel is expected to increase 5.8 percent annually, aquatic and mammalian damage could be substantial. Several pollution-preventing technologies are currently being developed and tested to counter the chemical runoff. Some airports, such as Denver's, use an on-site glycol recovery program to recapture and reuse de-icing fluids. At Milwaukee's General Mitchell Airport, Delta Airlines is testing specially designed nozzles that spray a low amount of glycol into the center of a high-pressure, heated air flow. By using the spray gun, the amount of glycol used per plane has dropped from 120 gallons to 25 gallons. The spray hits the plane at 800 miles per hour and decreases the amount of time needed to de-ice a plane.

(875 characters)

5. PRACTICE WHAT YOU PREACH

Can the actions of one group help to alter global attitudes about climate change? The World Resources Institute (WRI), an international research organization based in Washington, D.C., hope they will do just that. The staff voted on an initiative to reduce the institute's carbon dioxide emissions to zero. This would mirror the United States' commitment under the Kyoto protocol. WRI's estimated 1990 carbon dioxide emissions were more than 1,500 tons (equal to burning 170,000 gallons of gasoline).The emissions come not from smokestacks but indirectly from everyday office activities such as commuting, electrical and paper use, and travel. Some of WRI's short- and long-term goals include installing energy efficient lighting and equipment; turning off all equipment when not in use (by turning off a computer monitor each night, 2.5 tons of carbon dioxide emissions can be prevented annually); reducing the amount of paper used; replacing travel with videoconferencing; and working with other organizations such as the postal service and power company to make reduction of emissions a similar goal. WRI will track its progress by annually measuring and publicly reporting estimated emissions. The organization will add greenhouse gases other than carbon dioxide as he program progresses. Other organizations are encouraged to check out the WRI website.

(1153 characters)

6. ELIMINATING INTERNATIONAL POLLUTANTS

At the third round of talks on persistent organic pollutants (POPs), 420 representatives agreed on proposals to eliminate 10 intentionally produced POPs. The actions were in response to a mandate for a treaty from the governing council of the United Nations Environment Programme (UNEP). The participants also exempted some uses of DDT because of its public health benefit in controlling vectorborne diseases, such as malaria. The proposals will go to a fourth round in Bonn next March, after consideration from participating nations. POPs slated for elimination without exemption are the pesticides

aldrine, endrine, and toxaphene. Negotiators also agreed on scientific criteria for evaluating additional pollutants. Despite the controversial DDT response, Klaus Toepfer, executive director of UNEP, said that "concrete proposals were put forth to bring about an end to some of the worst pollutants of the 20th century," and actions were taken to build in safeguards for the future. He also called the DDT exemption "a win-win" situation. Stricken areas will be protected, while DDT use will be minimized until its final phase-out. The World Health Organization is also committed to reducing reliance on DDT while fully protecting public health. Other controversies exist, however. Even as some toxic chemicals are being phased out, others are being introduced.

(1156 characters)

7. LOOSE LOGIC ON ECOSYSTEM RESTORATION

With the possible exception of the zebra mussel, no alien species is better known than purple loosestrife. Since arriving from Europe about 200 years ago, it has spread over much of the United States and is now a familiar sight near ponds and other wetland areas. It also has a distinctly bad reputation, being widely regarded as an aggressive, rapidly expanding species that threatens native plants and animals. The reality is probably much more complex, however, according to Erik Kiviat, science director for Hudsonia-Limited in Annandale, New York.

After reviewing the existing literature on purple loosestrife, Kiviat has concluded that more needs to be known before an eradication program is launched. He notes, for instance, that loosestrife often becomes dominant in ecologically abused areas for which the previous flora and fauna are largely unknown. As a result, it is virtually impossible to predict what species these areas would contain if the loosestrife was removed.

Furthermore, a large number of animals have been found to use loosestrife, including more than 200 species of insects and 40 species of birds along with some mammals, amphibians, and spiders. This does not mean that the widespread presence of loosestrife is not harmful to some animal species – indeed, it probably affects those that rely on the plants that loosestrife displaces.

(1148 characters)

8. LEADED LIGHT

Some candles are dangerous to your health, according to Jerome Nriagu, a professor of environmental health sciences at the University of Michigan. When Nriagu examined lead emissions from 15 brands of candles made in the United States, Mexico, and China, he found that some candles have wicks with lead or lead cores that emit potentially dangerous levels of lead into the air that accumulate in closed spaces as they burn. Candles produced in China and the United States released the highest levels of lead. "Lead poisoning remains one of the most serious environmental health diseases in this country and other parts

of the world. It affects many organ systems and biochemical processes," cautioned Nriagu. Studies show that children's central nervous systems are particularly sensitive to lead; moreover, its effects are believed to be irreversible. Nriagu's study, conducted under the auspecies of the University of Michigan's School of Public Health, showed that lead emissions for the candles ranged between 0.5 and 327 micrograms an hour. After burning the candle for one hour, the lead levels in the air of the enclosed test space were estimated to range from 0.04 to 13.1 micrograms per cubic meter, compared with the U.S. Environmental Protection Agency recommendation of 1.5 micrograms per cubic meter for ambient air. Regular exposure to lead in this manner in confined spaces could pose health risks to people with weak immune systems, especially children and the elderly.

(1250 characters)

9. SMALLER ALL THE TIME

The so-called "small island states" of the world have been among the strongest proponents of international efforts to limit climate change, and for good reason – some of them are already beginning to feel the effects of rising sea levels. Over the last five years, researchers with the South Pacific Regional Environment Programme and Australia's Flinders University have documented rises in sea level of as much as 25 mm per year in the Pacific, considerably more than the 2 mm annual rises forecast by the Intergovernmental Panel on Climate Change. Two small islets in Kiribati have disappeared, and many more nations are experiencing serious erosion along their coasts. Even worse, sea water is seeping into the soil of low-lying areas, making them too salty to support the root crops that are one of the residents' primary sources of food.

The director of the South Pacific Environment Programme, attributes much of the rise in sea level to storm surges caused by more frequent El Ninos. But climate change may be playing a role as well. According to a study by Australia's Commonwealth Scientific and Industrial Research Organization, the buildup of greenhouse gases in the atmosphere by 1995 will lead to a 5 to 12 cm rise in sea level by 2020–25 in any case. Even under the highly optimistic assumptions that all countries meet their obligations under the Kyoto Protocol and cease emitting greenhouse gases altogether after 2020, the seas would rise 14 to 32 cm by about 2050.

(1240 characters)

10. WHITHER GM CORN?

Many corn producers are intimidated by market hesitation over genetically modified (GM) corn, according to the American Corn Growers Association (ACGA). As a result, they are looking for more non-GM seed for this year's planting. Corn growers and grain elevator operators across the country insist that

the risks associated with planting GM crops may be too great. They point to loss of export and domestic markets; questions about cross-pollination, testing, and certification; the difficulty of segregating GM and non-GM seeds in grain elevators; and the possibility that premiums being offered for non-GM crops will drive the demand for alternatives. "There are too many uncertainties in agriculture. Weather and a failed farm policy that is responsible for historically low commodity prices make farming difficult enough," says Gary Goldberg, ACGA's chief executive officer. "We can't handle the additional uncertainty of not knowing if our crops will be marketable to foreign and domestic buyers." The problem is that seed and chemical companies anticipated a growth in GM products for the coming year and many therefore find it difficult to supply the market's increasing demand for traditional seed. Congress is even holding hearings to determine the seed companies' ability to supply non-GM seed. Goldberg hopes the companies will make every effort to provide the seed requested and recommends that farmers apply to seed producers for traditional seed as soon as possible.

(1254 characters)

11. POLICY STATEMENTS: BIOFUEL SUSTAINABILITY

Much attention is currently focused on the use of biofuels as an alternative energy source, both to decrease U.S. dependence on foreign oil supplies, and as a means of addressing one facet of global climate change. Supplying the emerging biofuels industry with enough biomass to meet the U.S. biofuel energy target – replacing 30 percent of the current U.S. petroleum consumption with biofuels by 2030 – will have a major impact on the management and sustainability of many U.S. ecosystems. Biofuels have great potential, but the ecological impacts of their development and use must be examined.

The sustainability of alternative biofuel production systems must be assessed now, in order to maximize the potential for developing truly sustainable scenarios – that is, profitable systems that can provide adequate biomass with the least amount of environmental damage.

Biomass extraction and the byproducts of biofuel manufacturing will directly affect ecosystems in many ways. Much of the biomass needed for biofuel production will be supplied by croplands. Marginal croplands will be farmed more intensively and previously unfarmed areas will be brought into production. Current technologies emphasize the use of annual and perennial grains.

However, crop "leftovers," such as corn husks and wheat straw, and fiber from perennial crops such as switch grass are likely to contribute as well.

(1215 characters)

12. A CASE OF ASIAN FLUE

Recent evidence indicates that the United States is importing an unanticipated commodity from Asia: air pollution. The first sign of this came when a team of researchers from the University of Washington detected abnormally large concentrations of carbon monoxide, peroxyacetyl nitrate, and particulates in air that had crossed the Pacific Ocean. Computer models suggested that the polluted air had originated in Asia six days earlier. More definitive evidence of an Asian connection appeared in April 1998. At that time, major dust storms in China created a plume of dust that was visible as it crossed the ocean. When the plume reached North America, it was found to be laden with such heavy metals as arsenic, copper, lead, and zinc, which a scientist from the University of California, Davis, traced to smelters in Manchuria. According to Dan Jaffe, who headed the University of Washington team, such long-distance flows of air should be most common in the spring, when there is apt to be a high-pressure system over Hawaii coupled with a low-pressure system over the Aleutian Islands. For now, says Jaffe, the amount of pollution coming from Asia is not great enough to pose a threat to human health. But he notes that that could change as Asian countries become more industrialized.

(1078 characters)

13. HEALING TAKES TIME… AND SPACE

Streams in the southern Appalachians appear to retain the effects of environmental degradation decades after it ends. So reports Fred Benfield, a professor of biology at Virginia Tech University in Blacksburg. Benfields and his colleagues compared 12 streams in forested areas with 12 in agricultural areas. As expected, they found that biodiversity was much lower in the latter, apparently as a result of sediment washing into those streams from adjacent fields. Much to their surprise, however, two of the streams in forested areas also showed low biodiversity. The mystery was solved when old aerial photographs revealed that four decades ago the surrounding areas were largely agricultural. Further investigation showed that current levels of biodiversity are more closely correlated with land use in the 1950s than with that in later decades. Benfield and his colleagues also found that biodiversity depends on land use patterns throughout the watershed, not just those along stream borders. That implies that conservation efforts need to go beyond creating the 30-meter-wide buffer zones now used to protect streams.

(952 characters)

14. EXPLOSION IN JELLYFISH NUMBERS MAY LEAD TO ECOLOGICAL DISASTER, WARN SCIENTISTS

A dramatic global increase in jellyfish swarms could damage the marine food chain.

Global warming has long been blamed for the huge rise in the world's jellyfish

population. But new research suggests that they, in turn, may be worsening the problem by producing more carbon than the oceans can cope with.

Research led by Rob Condon of the Virginia Institute of Marine Science in the US focuses on the effect that the increasing numbers of jellyfish are having on marine bacteria, which play an important role by recycling nutrients created by decaying organisms back into the food web. The study, published in the journal *Proceedings of the National Academy of Sciences*, finds that while bacteria are capable of absorbing the constituent carbon, nitrogen, phosphorus and other chemicals given off by most fish when they die, they cannot do the same with jellyfish. The invertebrates, populating the seas in ever-increasing numbers, break down into biomass with especially high levels of carbon, which the bacteria cannot absorb well. Instead of using it to grow, the bacteria breathe it out as carbon dioxide. This means more of the gas is released into the atmosphere.

(979 characters)

15. NEON

For many years, Research Ecologist Tom Stohlgren has been at the forefront of developing and implementing ways of collecting, sharing, and relating information on non-native invasive species that plague native ecosystems and challenge public land managers in the United States. In particular, Dr. Stohlgren has focused on developing the capability to rapidly assess changes in biodiversity and identify habitats vulnerable to invasion. He and his team have built ecological forecasting models that combine field data with satellite and other remotely-sensed data, incorporating various data "layers" that include soils, the mix of native and non-native vegetation, climate, and other measures.

Lately, a new national infrastructure for monitoring ecological systems and trends has been taking advantage of his expertise. The National Ecological Observatory Network, or NEON, is "a proposed continental-scale research platform for discovering and understanding the impacts of climate change, land-use change, and invasive species on ecology". Dr. Stohlgren has been working with scientists from other agencies, academia, and the private sector that constitute this significant effort, sponsored by the National Science Foundation.

(1058 characters)

16. GREENHOUSE GAS REDUCTION STRATEGY MAY BE SAFE FOR SOIL ANIMALS

A new study has found that an emerging tool for combating climate change may cause less harm to some soil animals than initial studies suggested. Earthworms perform many essential and beneficial functions in the soil ecosystem, including soil structure improvement and nutrient mineralization. However,

the earthworms' ability to perform these crucial functions can be suppressed when they are exposed to toxic substances.

A Baylor University geology researcher, along with scientists from Rice University, tested a new soil additive called biochar for its effects on the common earthworm. The researchers found that wetting the biochar before applying it to the soil mitigates the harmful effects of biochar to earthworms and the earthworms' avoidance of soil with biochar.

"Because of the high potential for widespread application, it is essential to proactively assess and mitigate any unintended consequences associated with biochar soil enrichment," said study co-author Dr. Bill Hockaday, assistant professor of geology at Baylor. "The results show us that depending on rainfall patterns and irrigation, wetting biochar either before or immediately after soil application would be needed to prevent the disappearance of earthworms and enable their beneficial effects on plants."

The results appeared in the June issue of the journal *Soil Biology and Biochemistry*.

(1167 characters)

17. CLIMATE CHANGE SCIENTISTS TURN UP THE HEAT IN ALASKA

Scientists at the Department of Energy's Oak Ridge National Laboratory are planning a large-scale, long-term ecosystem experiment to test the effects of global warming on the icy layers of arctic permafrost.

While ORNL researchers have conducted extensive studies on the impact of climate change in temperate regions like East Tennessee, less is known about the impact global warming could have on arctic regions.

"We're beginning to take these lessons learned and start applying them to sensitive and globally important ecosystems, such as the arctic," said Stan Wolfsan of the Environmental Division. "The arctic regions are important to the global warming, because of the large land area they occupy around the world and the layer of permanently frozen soil, known as permafrost."

Wolfsan and a team of architects, engineers and biologists from ORNL and other national laboratories design simulate using computers and then field test large-scale manipulative experiments that purposely warm a test area in order to evaluate ecosystem response to projected climate conditions.

"Evidence is emerging that the arctic is experiencing a greater degree of warming than the rest of the globe," Wolfsan said. "There is a growing concern that this warming is already affecting a wide range of physical and ecological processes in the arctic, including permafrost degradation."

(1265 characters)

GLOSSARY

to the supplementary texts

A abuse эксплуатировать с нарушением правил, норм
accrue увеличиваться, накапливаться; доставаться (to)
acid mine drainage дренаж кислых шахтных вод
adjacent соседний, прилежащий
adversely неблагоприятно, вредно
aim for стремиться
algae водоросли
alien чужой, пришлый
alter менять, изменять, переделывать
abient окружающий
angler рыбак, рыболов
apparel наряд, одежда
apt (to) склонный, подверженный
army worm «походные черви», гусеницы
assess оценивать, определять (величину)
assumption предположение
attribute объяснять, приписывать (to) к чему-либо, кому-либо
auspices содействие, покровительство
B belt пояс, зона, полоса
biodiversity биологическое разнообразие
bunch куст, дерновина
C call for требовать
carbon dioxide углекислый газ, углекислота
cast doubt on подвергать сомнению
caution предостерегать
cease переставать, прекращать
cite ссылаться, цитировать
charcoal древесный уголь
chip щепка, стружка, опилки
choke душить, засорять
collateral вспомогательный, побочный
commit передать на рассмотрение
commitment взгляды, приверженность; передача законопроекта в комиссию
commodity товар, продукт, предмет потребления
commute переключать (ток)
complacent почтительный, любезный
complicate затруднять, осложнять
confine ограничивать
conservation сохранение, рациональное природопользование
core сердцевина, ядро

correlate находиться в связи
counter противоречить
counterpart копия, двойник
cretaceous меловой
cropland пахотная земля
cross-pollination перекрестное опыление
crush давить, дробить
cub детеныш
D decline уменьшаться, спадать
DDT инсектицид сокр. от dichlorodiphenyltrichloroethane
de-ice предотвращать обледенение
denude обнажать смывом, лишать
deplete уменьшать, истощать, исчерпывать влияние яда
devise разрабатывать, продумывать
discard избавляться от чего-то, отказываться, оставлять
disorder нарушение, расстройство
displace вытеснять
diversity, species ~ видовое разнообразие
E earthworm дождевой, земляной червь
emit выделять, излучать; emission выделение, распространение
eradication истребление, уничтожение (напр. вредителей)
erosion разъедание, разрушение, размывание
escape избегать, спастись
excrete выделять, извергать
exempt освобождать; предоставлять привилегии
exemption освобождение; исключение, изъятие
extensive громадный; большое количество
extraction добыча, извлечение
F facet грань, аспект, сторона
fashion создавать
flyway пролетный путь (перелетных птиц)
food web пищевая «сеть»
fragmentation дробление, разделение
G generate производить, делать
H handle обходиться; справляться с кем-либо, чем-либо
harbor убежище, укрытие
hardness степень твердости минерала
hazardous опасный
heal исцеление
hesitation колебание, сомнение, неуверенность
hit выталкивать
humid влажный, сырой, ~ity влажность
I impact влияние, воздействие

impose помещать, устанавливать
income доход, прибыль
infuse зд. наполнять
intact нетронутый, целый, невредимый
intimidate пугать, наводить страх
invertebrate беспозвоночное животное
irreversible необратимый
irrigation полив, орошение
J jellyfish медуза
K kale капуста
L landfill мусорная свалка; закапывание мусора, отходов
leftover остаток
lighting естественное освещение
livestock домашний скот
loosestrife бот. вербейник; дербенник
M maize кукуруза, маис
marginal приграничный, краевой
metabolize усваивать
mussel мидия (моллюск)
N nontarget необъектный, не являющийся объектом
Norse скандинавы, норвежцы
nozzle насадка, наконечник
P panel комиссия
paper канцелярский
particulate частичка
perennial многолетний
phase out постепенно прекращать
plague нападать, поражать
plume струйка, столбик (дыма, газа)
pose представлять собой, являться
preach проповедовать
proponent защитник, сторонник
R rapeseed сурепное, рапсовое семя
recapture брать обратно
reliance доверие, уверенность
retard замедлять, задерживать
runoff сток; смыв поверхности
runway взлетно-посадочная полоса
S sapling побег; молодое деревцо
scented ароматизированный
scrutiny исследование, наблюдение
seed семя, зерно
segregate отделять, разделять

sequestration секвестрация; изоляция
shield заслонять, защищать
shoot веточка, росток, побег
shrimp креветка
simulate воспроизводить
sighting осмотр, наблюдение
slate пороть, бить; устраивать разнос, давать нагоняй
smelter плавильная печь
spray gun пистолет-распылитель, пульверизатор
stratification напластование, наслоение
stricken пораженный
subject, be ~ to быть подверженным
surplus избыток, излишек, остаток
suspended хим. взвешенный
T tend сокр. от attend заботиться, ухаживать
terrestrial живущий на/в земле; сухопутный, наземный
till возделывать землю, пахать
threshold порог; начало, вход
turnip репа
U unanticipated неожиданный, непредвиденный
V vector borne трансмиссивный; передаваемый переносчиком (болезни)
vulnerable ранимый, уязвимый
W waste dump породный отвал
weed out полоть; искоренять, уничтожать
whither куда; в какой степени
wick фитиль
Y yield урожай

БИБЛИОГРАФИЧЕСКИЙ СПИСОК

1. Encyclopedia Britannica CD2000 Deluxe, Windows 95, 98 или NT; 100 Мб HDD; 2xCD-ROM.
2. Рыжков, В.Д. Деловой английский язык. Менеджмент: пособие по изучению англ. языка / В.Д. Рыжков. Калининград: Янтарный Сказ, 2006. 256 с.
3. Рыжков, В.Д. Разговорный английский язык в бытовых и деловых ситуациях / В.Д. Рыжков. Калининград: Янтарный Сказ, 2006. 528 с.
4. Репетиционное тестирование. www.fepo.ru/test_demo.php.
5. Scientific Journals: ScienceDaily, Mining Engineering, Mining Technology, Environment, Environmental Science and Technology, 2008 – 2012.
6. Синельникова, М.В. Разговорные темы к экзаменам по английскому языку: рабочая тетрадь / М.В. Синельникова. 9-е изд. СПб: КОРОНА принт, 2004. 256 с.

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