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ДРУЖБЫ НАРОДОВ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ»**

АНГЛИЙСКИЙ ЯЗЫК

**Методические рекомендации по английскому языку
для студентов фармацевтического факультета**

Т.Н. Ивина, И.С. Андреева, Е.В. Афанасьева

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Методические рекомендации по английскому языку предназначены для преподавателей и студентов, имеющих фоновые фармацевтические знания, для работы в аудитории. В рекомендациях разработаны приемы, позволяющие осуществлять переход от изучения английского языка к его практическому использованию в будущей работе выпускника фармацевтического факультета. Пособие снабжено приложением, включающим список сокращений и список греко-латинских терминологических элементов, глоссарием и англо-русским словарем.

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ПРЕДИСЛОВИЕ

Методические рекомендации представляют собой дополненное и переработанное пособие по курсу английского языка для преподавателя и студентов фармацевтического факультета для работы в аудитории с целью закрепления приобретенных навыков профессионального устного общения и навыков чтения литературы с целью расширения и закрепления терминологического пласта лексики.

Пособие состоит из шести разделов, текстовый материал которых дает основу для развития беседы на темы: "From the history of pharmacy", "Pharmaceutical sciences", "Active constituents of drugs", "Discovery and development of new medicines", "Plants as sources of drugs", "Commonly used drugs". Познавательность и профессиональная направленность языкового материала являются стимулом к речевым действиям – воспроизведению текста и обсуждению с оценкой или комментариями прочитанного.

Каждый раздел пособия состоит из четырех частей: 1) распознавание или узнавание изученной грамматической структуры на синтаксическом уровне на основе выполнения серии упражнений; 2) изучение профессиональной лексики на основе выполнения лексических упражнений и тщательного прочтения текста с элементами анализа; 3) чтение про себя с пониманием читаемого. Оценка понимания осуществляется путем выполнения упражнений, которые готовят основу для устного высказывания по изучаемой теме; 4) устное высказывание по изученной тематике в виде монологической и диалогической речи.

В пособии, помимо традиционных упражнений, предлагаются условно-речевые и коммуникативно-направленные упражнения.

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SECTION I

Topic for reading and discussion

"FROM THE HISTORY OF PHARMACY"

Grammar: 1. Word Order. The predicate in the Passive Voice (review).

PART I. Structure Recognition

Table I

The System of the English Tenses (Passive)

Tense	Present		Past		Future		
Indefinite	I	am	treated	was	treated	shall	be treated
	he	is		was		will	
	She	is		was		will	
	It	is		was		will	
	We	are		were		shall	
	you	are		were		will	
they	are	were	will				
Continuous	I	am	being treated	was	being treated	—	—
	He	is		was			
	She	is		was			
	It	is		was			
	We	are		were			
	you	are		were			
they	are	were					
Perfect	I	have	been treated	had	been treated	shall	have been treated
	he	has				will	
	she	has				will	
	it	has				will	
	we	have				shall	
	you	have				will	
they	have	will					

Exercise I. Define the tense and voice form of the following predicates and translate them:

was included
has been manufactured
have been used
is seen

has been treated
will be given
will have been studied
was invited

was treated
has graduated
had had

are established
have been trained
had been

Exercise 2. Make up sentences matching the suggested words and word combinations:

I, he, they drugs chemistry students	is am are was were will be	used given studied	medicines stipends	regularly last week three times a day once a month in the first year
I, he, they drugs chemistry students	is am are was were	being used being given being studied	medicines stipends	now from 2 till 4 o'clock yesterday
I, he, they drugs chemistry students	have has had shall have will have	been used been given been studied	medicines stipends	before 1988 for three years by the end of the year

Exercise 3. Read and translate the sentences. Define the tense and voice form of each predicate.

1. Modern pharmacology is closely associated with medicine and depends heavily upon basic physical and biological sciences.
2. Understanding the structure, properties and mechanism of the drug action requires a high degree of chemical and pharmacological knowledge.
3. His works were of pharmacological importance and he was invited to deliver lectures at the university.
4. In order to learn more about medicinal plants; many universities established botanical gardens parts of which were used for growing medicinal herbs.
5. Quality and performance of commercially manufactured drug products had been evaluated by the end of the previous month.

6. Many physicians in the Latin American countries express the belief that most pharmacists are not adequately trained.

Exercise 4. Read the sentences using the verb in brackets in the corresponding tense of the Perfect Passive.

1. For a long period plants (to use) as protection against diseases.
2. By the sixteenth century a number of methods for preparing chemical compounds (to develop) and (to introduce) into materia medica.
3. Historically interest in drugs and their effect closely (to associate) according to the organ systems which they affect.
4. Following the discovery of penicillin many new antibiotics (to isolate).
5. Quality control procedures (to develop).
6. Friendly relations with universities, colleges and research institutes (to establish) by the Dean and professors of the pharmaceutical faculty of Poznan.

Exercise 5. Make up the interrogative sentences matching the suggested parts.

is am are was were will	I, he, they drugs chemistry students	be	used given studied	medicines stipends	regularly last week three times a day once a month in the first year
is am are was were	I, he, they drugs chemistry students		used given studied	medicines stipends	now from 2 till 4 o'clock yesterday
have has had shall will	I, he, they drugs chemistry students	have	been used been given been studied	medicines stipends	before 1988 for three years by the end of the year

Exercise 6. Note that in science the sentence is often written in a passive form because the important idea is not who does, did, or will do something but what is, was or will be done, did or will do the action. Transform the sentences according to the model.

Model: They investigated the active constituents. Active constituents were investigated by them.

1. The department of pharmacy studied the most important plants.
2. Pharmacists have developed and maintained a system for regular check-up of sick people on self- medication.
3. They have done the necessary work in physics, chemistry and biology.
4. Galen defined a drug as being anything which acts on the body and brings about change in it.
5. He compounded 54 substances against poisoning.
6. He gave the patient a packet of capsules or tablets containing a highly active prescription drug.

Exercise 7. Choose the corresponding form of the verbs given in brackets. Translate the sentences into Russian.

1. Only at present man (has acquired, has been acquired) knowledge about the chemical structure of many plant constituents.
2. For a long period alcohol (has used, has been used) as a solvent in many mixtures.
3. He (has arranged, has been arranged) the elements according to a definite system.
4. The elements (have arranged, have been arranged) according to a definite system.
5. The medication in a powder form (has kept, has been kept) in a refrigerator.

Exercise 8. Translate the sentences in which the prepositional verbs occur in the Passive voice.

Note that the construction is typical for formal style and difficult for translation. It is not used in the Russian language. These verbs are:

to deal with	- рассмотреть вопрос и т.д.:
to send for	- посылать за;
to listen to	- слушать;
to speak about (of)	- говорить о чем-либо;
to speak to	- говорить с кем.-либо;
to rely on	- полагаться на;

to act upon	- действовать на.
to look at	- смотреть на.

1. Numerous other topics in the field of botany and pharmacognosy have been dealt with in the main programmes of the faculty.
2. The lecture was listened to with great attention.
3. He was spoken to about the problems that appear through package and product storage.
4. The pharmacist was immediately sent for as it was difficult to prescribe the patient the proper medicine.
5. The drug is acted upon by an additional amount of acid mixtures.

Exercise 9. Translate the sentences with the verbs in the passive.

Note that the verbs correspond to the Russian prepositional verbs which are not used in the passive. Such sentences are difficult for translation. These verbs are:

to attend	- присутствовать на;
to follow	- следовать, следить, наблюдать за;
to influence	- влиять на;
to answer	- отвечать на;
to join	- присоединяться, вступить в;
to affect	- воздействовать на;
to need	- нуждаться в;
to watch	- следить, наблюдать за.

1. The experimental data were followed with great attention.
2. New drugs effective in the treatment of AIDS (Acquired Immunity Deficiency Syndrome) are badly needed.
3. The problem was not answered as it is in the curriculum of the third year of the pharmaceutical department.
4. The meeting was attended by hundreds of students.
5. It is planned that the plants will be affected by gamma rays for a period of 2 hours followed by a magnetic field action.
6. The time of herb collection is influenced by the state of weather.

Exercise 10. Use a preposition if necessary

1. Don't listen ... what he says. He's stupid.
2. When I looked ... my watch, I couldn't believe that it was so late.
3. I'm looking ... Tom. Have you seen him anywhere?
4. The book is very much spoken ...

5. The doctor will be sent ... at once.
6. This man can be relied
7. I had time to read all the papers carefully but I looked ... them all.
8. This article deals ... an interesting problem.
9. A great number of students attended ... the lecture.
10. The telegram was followed ... by a letter.
11. Your help is needed
12. The football match was watched ... with interest.
13. The growth of plants was affected ... by proper conditions.

Exercise 11. Translate:

1. На него можно положиться.
2. Послали ли уже за ним?
3. Я уверен, что его будут слушать с большим интересом.
4. На вещества действовали кислотой.
5. В статье рассматривается вопрос о развитии фармакологии.
6. Лектор ответил на все вопросы студентов.
7. Новые открытия повлияли на развитие этой области науки.
8. За важными открытиями в фармакологии последовал революционный прогресс в разработке лекарств.

Exercise 12. Read the text using Present or Past Indefinite Passive of the verbs in the list: produce, use, obtain, require, treat, establish, discover, make, send, dry.

Natural rubber ... from rubber trees as a white, milky liquid known as latex. This ... with acid and ... before it ... to the countries all over the world. As the rubber industry developed, more and more rubber Rubber plantation ... in countries with a hot, humid climate, but these still could not supply sufficient raw rubber to satisfy the requirements of developing industry.

For many years attempts ... to produce a substitute, but they were unsuccessful. Finally, a method of producing synthetic rubber ... which in many ways is superior and in some ways inferior to natural rubber. Synthetic rubber ... in factories by a complicated chemical process. It is usually cheaper than natural rubber. At present the world requirements for rubber are so great that both natural and synthetic rubber ... in large amounts.

Exercise 13. Change the voice of each sentence.

Note that the italicized words can be used as subjects.

1. People have cultivated corn for many thousands of years. 2. Livingstone noted the use of seeds and extracts of Strophantus by natives of Africa. 3. A number of authors have shown the stimulation of microsomal enzyme activities. 4. The French scientist Louis Pasteur and the German doctor Robert Koch established the germ theory of disease. 5. The Egyptians used castor oil as a laxative. 6. In 1796, the English doctor Edward Jenner developed the first successful vaccination. 7. He studied the essential oils and treated a number of them with reagent.

Exercise 14. Answer the questions using passive constructions.

1. In what year do you study pharmacology? 2. What aspects does modern pharmacy curriculum include? 3. What drugs do we use to treat infectious diseases? 4. How do we define a drug? 5. Will you use sulfanilamide in your experiment? 6. Is it necessary to determine the melting point of the substance? 7. What first antibiotic has man produced? 8. Who invented the first microscope?

PART II. Vocabulary Learning**Exercise 1.** Read and translate the words of the Latin and Greek origin:

Prehistoric [pri:'hɪs tɔ:'rɪk], civilization [sɪvɪ'lɪzɪʃən], function [fʌŋkʃən],
prescription [prɪs'krɪpʃən], ingredient [ɪn'grɪ:dʒənt],
anemia [ə'ni:mɪə], infectious [ɪn'fektʃəs], effective [ɪ'fektɪv],
revolutionary [revə'lju:ʃənəri], pioneer [pɪə'ɪəriə], minerals ['mɪnərəʃɪz],
structure [stʁʌktʃə], human [hju:mən], circulate [sə:kjuleɪt],
practice ['præktɪs], manufacture [mænju'fæktʃə], industry [ɪndə'stri].
remedy ['remɪdi], jaundice [dʒɑ:ndɪs], malachite [mələ'keɪt],
agate [ə'geɪt], technique [tek'nɪk].

Exercise 2. Read and memorize the words of the active vocabulary.

ache [eɪk], n	- боль;
add [æd], v	- добавлять;
advance [əd'vɑ:ns], n	- успех, достижение;
arise [ə'raɪz], v	- возникать, появляться;
acquire [ə'kwɑɪə], v	- приобретать;
clay tablet [klaɪ'tæblɪt]	- глиняная табличка;

crude [], <i>a</i>	- зд: несовершенный;
call for [], <i>v</i>	- требовать, предусматривать;
cure [], <i>n</i>	- лекарство, средство; лечение;
	- лечить;
decline [], <i>v</i>	- приходить в упадок;
demand [], <i>n</i>	- требование, необходимость;
disease [], <i>n</i>	- болезнь;
germ [], <i>n</i>	- микроб;
harm [], <i>n</i>	- вред, ущерб;
	- причинять вред;
	- слабительное;
laxative [], <i>a</i>	- положить начало;
lay [] (laid) the foundation, <i>v</i>	- случайно;
occasionally [], <i>a</i>	- темп, скорость;
pace [], <i>n</i>	- боль;
pain [], <i>n</i>	- прописывать;
prescribe [], <i>v</i>	- ускорять, оживлять;
quicken [], <i>v</i>	- выздоравливать;
recover [], <i>v</i>	- облегчать, успокаивать;
relieve [], <i>v</i>	- лекарство, средство от боли;
remedy [], <i>n</i>	- манускрипт;
scroll [], <i>n</i>	- больной;
sick [], <i>n</i>	- мельчайший;
tiny [], <i>a</i>	- лечить;
treat [], <i>v</i>	- богатство.
wealth [], <i>n</i>	

Exercise 3. *The following words are often confused.*

Ache - pain

Ache is mainly found in the following compounds: **backache, earache, headache, stomach-ache, toothache**. For other parts of the body, we say **a pain in my elbow**, etc.

But: **to have a sore throat, eye**.

An **ache** is dull and continuous; a **pain** can be more extreme and more sudden.

Use the proper word.

1. I have a terrible ... in my chest. 2. I had a bad head ... yesterday. 3. Some people have a bad ear ... when the plane is losing height. 4. I can't speak louder, I have a ... throat. 5. I feel a sharp ... in my right knee. 6. My leg gives me much

Exercise 4. Read and translate the words with the same root:

discover. discovery, discovered; add, addition, added, additional; treat, treatment, treated; use, used, useless, useful; recover, recovery, recovered; prescribe, prescription, prescribed; science, scientist, scientific; harm, harmful, harmless; introduce, introduction; determine, determination, determined.

Exercise 5. Make up word combinations. Translate them.

1. drug	1. body
2. disease	2. important
3. remedies	3. harmful
4. scroll	4. Egyptian
5. discovery	5. useless
6. advance	6. infectious
7. function	7. new

1. to write	1. tiny organisms
2. to add	2. discoveries
3. to discover	3. prescription
4. to use	4. drugs
5. to relieve	5. pain
6. to cure	6. minerals
7. to study	7. anemia

Exercise 6. Translate the words of the active vocabulary given in brackets:

1. Prehistoric peoples discovered that their (боль) disappeared after they ate certain plants.
2. Arab doctors (добавили) new discoveries to the knowledge of drugs.
3. Scientists made important (успех) in pharmacology and in other fields of science.
4. During the Middle Ages the science (пришла в упадок) in Europe.
5. But scientists had not yet learned what causes (инфекционные заболевания).
6. Arab doctors (приобрели) the knowledge of drugs from the ancient Romans and Chinese.
7. The ancient Greeks opened the first pharmacy and wrote the first prescriptions (требующие) definite amounts of drug ingredients.

Exercise 7. Translate the following word combinations:

A clay tablet, an Egyptian scroll, definite amounts of drugs ingredients, to recover naturally, a laxative, to add new discoveries to the knowledge of drugs, the demand for drugs, useless or harmful drugs, to make important advances in pharmacology, revolutionary progress in the development of drugs, to pioneer the use of minerals as drugs, advances in knowledge, a description of the body's structure, crude microscopes, successful vaccination, a search for vaccines, to isolate drugs, germ theory, particular diseases.

PART III. Reading Comprehension

Read and translate text 1.

TEXT 1**MILESTONES IN THE HISTORY OF DRUGS**

Prehistoric peoples probably used drugs long before the first civilizations arose. It is likely they discovered that their aches and pains disappeared after they ate certain plants. They may have also noticed that animals ate certain plants only when ill and then recovered. Prehistoric people probably then ate the same plants when they felt sick.

Drugs in ancient times. The oldest known written record of drug use is a clay tablet from the ancient Sumerian civilization of the Middle East. This tablet, made in the 2000's B.C., lists about a dozen drug prescriptions. An Egyptian scroll from about 1550 B.C. names more than 800 prescriptions containing about 700 drugs. The ancient Chinese, Greeks, and Romans opened the first pharmacy and wrote the first prescriptions calling for definite amounts of drug ingredients.

Although ancient peoples used many drugs, most of the remedies were useless. Occasionally, people who had taken useless remedies recovered naturally. As a result, they thought the drugs were responsible. However, ancient peoples did discover some effective drugs. The Greeks and Romans, for example, used opium to relieve pain. The Egyptians used castor oil as a laxative, and the Chinese ate liver to cure anemia.

Drugs in the Middle Ages. During the Middle Ages, which lasted from the A.D. 400's to the 1500's, interest in learning and science declined in Europe. As a result, Europeans produced little new information about drugs. But the Middle East, Arab doctors added new discoveries to the knowledge of drugs they had acquired from the ancient Romans and Chinese. The Arabs later passed on their wealth of knowledge about drugs to Europeans.

Throughout the Middle Ages, the demand for drugs remained high, and pharmacies became increasingly common in Europe and Arab world. But scientists had not yet learned how the human body functions, what causes infectious disease, or how drugs work. As a result, people continued to take many useless or harmful drugs, in addition to some effective ones.

Scientific advances. During the 1500's and 1600's, doctors and scientists made important advances in *pharmacology* (the study of drugs) and in other fields of science. These advances laid the foundation for later revolutionary progress in the development of drugs.

In the early 1500's, the Swiss doctor Paracelsus pioneered the use of minerals as drugs. He introduced many compounds of lead, mercury, and other minerals in the treatment of various diseases. But further progress in the development of drugs required advances in knowledge of the structure and functioning of the human body.

In 1543, the Belgian doctor Andreas Vesalius, known as the father of anatomy, published the first complete description of the body's structure. In the early 1600's, the English doctor William Harvey discovered how blood – pumped by the heart – circulates through the body. Later in the 1600's Anton van Leeuwenhoek, an amateur Dutch scientist, discovered bacteria. He used crude microscopes to study the tiny organisms. But the role of germs as a cause of disease was not established until the 1800's.

The drug revolution began about 1800's and has continued to the present. During this period, scientists have discovered hundreds of drugs. They have also discovered the cause of many diseases, determined how drugs work, and learned much about how body functions. The practice of medicine has been revolutionized, in large part by the use of drugs. Pharmacology has developed into an important science, and the manufacture of drugs has become a large industry.

In 1796, the English doctor Edward Jenner developed the first successful vaccination in an effort to prevent the often deadly disease smallpox. This discovery led to a search for vaccines against other diseases. This search gradually developed into the science of immunology.

Scientists learned how to isolate drugs from plants during the early 1800's. In 1806, morphine became the first of the plant drugs to be isolated. Within a few years, scientists had also isolated quinine, as well as other plant drugs. Later in the 1800's, the French scientist Louis Pasteur and the German doctor Robert Koch established the germ theory of disease. Pasteur proved that germs cause infectious diseases and that the spread of such diseases can be stopped by killing the germs responsible. Koch developed a method for determining which bacteria cause particular diseases.

The pace of the drug revolution quickened in the 1900's. In fact, most of the major drugs used today have been discovered since 1900.

Exercise 1. Find in the text English equivalents for the following words and word combinations:

задолго до возникновения первых цивилизаций; первые рецепты, требующие определенного количества лекарственных ингредиентов; открывать эффективные лекарства; облегчать боль; принимать много бесполезных или вредных лекарств; важные успехи в фармакологии; устанавливать базу (основу); причина многих заболеваний; производство лекарств; изучать мельчайшие организмы; структура и

функционирование человеческого организма; инфекционные заболевания.

Exercise 2. Agree or disagree with the following statements.

Use the phrases:

I suppose (think) so. That's very true. Exactly so. I don't think so. I'm afraid I can't agree with you. I don't believe that.

- 306266
1. Prehistoric peoples used drugs long before the first civilisation arose.
 2. The ancient Sumerians opened the first pharmacy and wrote the first prescriptions.
 3. Europeans produced much new information about drugs and added new discoveries to the knowledge of drugs.
 4. During the 1500's and 1600's, doctors and scientists made important advances in pharmacology and other fields of science.
 5. The Swiss doctor Paracelsus introduced many compounds of lead, mercury, and other minerals in the treatment of various diseases.
 6. The role of germs as a cause of disease was established in the 1600's.
 7. In the 1800's scientists have discovered the cause of many diseases, determined how drugs work, and learned much about how body functions.
 8. Jenner's discovery led to the development of immunology.
 9. In 1806, quinine became the first of the plant drugs to be isolated.
 10. The French scientist Louis Pasteur and the German doctor Robert Koch established the germ theory of disease.
 11. Most of the major drugs used today have been discovered since 2000.

Exercise 3. Answer the following questions:

1. What did prehistoric people use as drugs?
2. What kind of remedies did ancient people use?
3. Who added new discoveries to the knowledge of drugs? Why?
4. Why did people continue to take many useless or harmful drugs?
5. What were the scientific advances in pharmacology during the 1500's and 1600's?
6. When did the drug revolution begin?
7. What was discovered during this period?
8. Did these discoveries help on the development of pharmacology?
9. What led to the development of immunology?
10. When have most of the major drugs used today been discovered?

Read text 2 and be ready for a comprehension check-up.

TEXT 2

FROM THE HISTORY OF PHARMACY

From time immemorial amulets, talismans and magic plants have been used as protection against diseases, or for treating the sick. "Birthstones"¹ are an example of talismans still in use today. It was commonly believed that many illnesses were caused by evil spirits² and that their influence could be overcome by secret use of certain things, by magic herbs or by certain minerals. There were countless different kinds of amulets. For example, it was considered that gold helped to treat jaundice, malachite, agate gave protection against gout. Amulets for protection against "evil eye"³ were often decorated with eyes or three running legs.

Certain drugs or medicinal plants were part of the treatment against spirits of diseases. Plants used included rye, mistltoe, garlic, etc. Many of these magic plants were later used medicinally. The 17th and 18th centuries saw the start of scientific pharmacology and medicinal therapeutics. Among those who contributed to the development of pharmacy were chemists, botanists, physicians. Thus, a famous chemist **J. Baptist van Helmont** (1577-1644) recommended the introduction of many chemical substances into materia medica and he developed a number of methods for preparing chemical compounds. At that time carbolic acid was discovered. Cinchona bark was introduced for treating malaria. As more drugs were discovered, the volume of pharmacological literature grew. The pharmacopoeia medico-physica of **Christian Schröder** that appeared in 1641 was one of the most famous books of the time.

Friedrich Hoffman (1660-1742) was a well-known pharmaceutical chemist of his time. He studied the essential oils, treated a number of them with reagent, e.g. nitric acid and examined drugs derived from animals and plants. **H. Boerhaave** (1668-1738), the Dutch Professor of medicine, Chemistry and Botany in Leiden, showed his attitude to contemporary problems in chemistry.

Robert Boyle (1627-1691) was the founder of modern analytical chemistry. His contributions to medicine and pharmacy included studies on, and improvements in the techniques for preparing pharmaco-chemicals.

Albrecht von Haller (1700-1777) graduated as Doctor of Medicine when he was only 19 years of age. His works were of pharmacological importance. In 1736 he was invited to teach at the University of Göttingen and became internationally renowned with students from every country visiting Göttingen to listen to his lectures. In his books on pharmacology he

advocated the therapeutic use of *Digitalis purpurea*. The principles laid by him for using digitalis are still valid today.

The work of **Carl W. Sheele** (1742-1786) opened a new era in pharmaceutical chemistry. His work was aimed at purifying the active constituents of a crude drug by crystallization.

Up to the end of the 18th and beginning of the 19th century advances and discoveries of these scientists had found little practical application in medicine.

In an attempt to learn⁵ more about medicinal plants many universities established botanical gardens part of which were used exclusively for growing medicinal herbs. Many chemical and pharmaceutical factories grew from existing pharmacies. Industrial laboratories contributed to scientific research and university laboratories made major contributions to progress in pure science.

Notes to the text:

1. "birthstones" - драгоценные камни, соответствующие знакам Зодиака;
2. "evil spirit" - злой дух;
3. evil eye - «дурной» глаз;
4. university of Göttingen - Гёттинген – город в Нижней Саксонии, Германии, известный университетом, основанным в 1737 г.;
5. in an attempt to learn more - пытаюсь узнать больше.

Exercise 1. Supply the facts confirming the following statements from the text.

1. In the early period the development of pharmacy was due to the works of botanists and chemists.
2. Some famous scientists were specialists not only in chemistry but in other fields too.
3. Many physicians contributed to the development of pharmacology.
4. Many drugs that are used at present were discovered in the 16th-18th centuries.
5. At the earliest times sick people were treated not only with talismans and birthstones.

Exercise 2. Complete the sentences choosing the proper phrase that corresponds to the contents of the text.

1. Cinchona bark was introduced a) for treating tuberculosis; b) as a protection against gout; c) for treating malaria. 2. Gold was used a) as a remedy to treat jaundice; b) as a decoration; c) for protection against "evil

eye". . . As more drugs were discovered *a)* he studied the essential oils; *b)* he outlined his attitude to contemporary problems in chemistry; *c)* the amount of pharmacological literature grew. 4 Albrecht von Haller graduated as Doctor of Medicine at the age of 19 *a)* was invited to deliver lectures to Göttingen; *b)* lived in Göttingen and delivered lectures to students from many countries; *c)* invited many scientists to teach at the University of Göttingen. 5. In an attempt to learn more about medicinal plants *a)* many universities were established; *b)* botanical gardens were growing medicinal herbs; *c)* botanical gardens for growing medicinal herbs were established by universities.

Exercise 3. Define what statements do not correspond to the contents of the text:

1. It was considered that many illnesses were caused by evil spirits. 2. Plants used for the treatment against spirits of diseases were later used medicinally. 3. Till the 19th century discoveries of the scientists found much practical application. 4. C.W. Sheele tried to purify the active constituents of crude drugs by crystallization. 5. Besides pharmacies, many chemical and pharmaceutical factories existed at that period. 6. Laboratories of the industrial enterprises contributed to scientific research.

Exercise 4. Paraphrase the following sentences using the verbs and word combinations in brackets, to say about somebody's success, ability, failure or difficulty in doing something.

Model: Albrecht von Haller graduated as Doctor of Medicine at the age of 19; (to succeed in doing smth). - Albrecht von Haller succeeded in getting the degree of Doctor of Medicine at the age of 19.

1. In the 17th and 18th centuries chemists, botanists, physicians could contribute greatly to the development of pharmacy; (to manage). 2. A famous chemist Baptist von Helmont developed a number of methods for preparing chemical compounds; (to cope with the problem). 3. Cinchona bark was introduced to treat malaria; (to achieve success in doing smth). 4. Robert Boyle improved the techniques of preparing pharmaco-chemicals; (to succeed in doing smth). 5. Carl Sheele was able to purify active constituents of a crude drug by crystallization; (to manage). 6. Up to the end of the 18th and the beginning of the 19th century discoveries of many scientists had found little practical application in medicine; (to find difficulty in doing smth). 7. Due to the growth of many chemical and pharmaceutical factories great progress in pure science was made; (to advance greatly).

Exercise 5. Fill in the table and discuss the discoveries of different scientists.

No	Date	Name	Discovery
1.			
2.			

Read text 3 and be ready for a comprehension check-up.

TEXT 3

THE BEGINNINGS OF BOTANY

Green plants are almost alone in their ability to build up from the inorganic elements found in water, air, and soil, those complex organic substances, such as sugar, starches, oils and proteins, which are essential constituents of animal and human food. Very early in the history of the human race some kinds of plants were selected and cultivated as food for man or his herd* animals; but even at the present time only a very small proportion of the total number of plants is cultivated for food. The wider study and knowledge of plants owe more to the use of herbs in primitive medicine.

Some of the earliest scientific observations on plants were made by Greek philosophers. **Theophrastus**, a pupil of Plato and Aristotle, was known as the Father of Botany and he was studying plants from many the same points of view as in present day branches of botany. The word "botany" is very appropriately derived from Greek word for a herb. After the fall of Alexandria until the fall of the Roman Empire little advance was made in scientific knowledge. A more vigorous period began to awake with the founding of universities - Paris 1110, Bologna 1113, Oxford 1167, and Cambridge 1209.

Famous botanic gardens were founded, and a number of herbals appeared. Modern botany dates from about 1840, since then the advances have been spectacular. This has depended in part on advances in the techniques of the pure sciences of chemistry and physics.

In the eighteenth century, the Swedish botanist **Carolus Linnaeus** described an enormous number of plants and arranged them in an artificial system of classification, based largely on numbers of flower parts. He also simplified the system of naming plants, previously the names had often consisted of as many as five or six Latin words, but he reduced these to two words only in his Binominal System of Nomenclature in which each received a general (or generic) and a special (or specific) name.

At Vienna Congress 1905 it was decided that Linnaeus's two books "Genera Plantarum" (1737) and "Species Plantarum" (1753) should be taken as the starting point for modern nomenclature. As Linnaeus described and named all plants then known, his name (L. or Linn) occurs after the specific name of very many plants.

Note:

* herd - стадный.

Exercise 1. *Say whether the following sentences are true or false:*

1. Some of the earliest scientific observations on plants were made by Indian scientists.
2. Aristotle was known as the Father of Botany.
3. Famous botanic gardens were founded in 1450 and a number of herbals appeared.
4. The word "botany" is derived from Latin word for a herb.
5. The advances in botany were spectacular due to the development of chemistry and physics.
6. Carolus Linnaeus reduced the names of plants to two words only.
7. The 1905 Congress at Vienna decided that Linnaeus system of naming plants was difficult to apply.

Exercise 2. *Answer the questions.*

1. What was the main use of plants and herbs in the early time?
2. What gave the possibility to use herbs in primitive medicine?
3. Who was the Father of Botany?
4. What is the origin of the word "botany"?
5. When did botany begin to advance rapidly? Why?
6. Why does modern botany date from 1840?
7. Who arranged a number of plants in an artificial system of classification?
8. What is this system based on?
9. What two books were taken as the starting point for modern nomenclature?

PART IV. Speech Exercises

Exercise 1. Complete the sentences using the material of the topic "History of pharmacy".

1. In the early period it was commonly believed that 2. Prehistoric peoples probably 3. Ancient peoples did discover some effective drugs 4. In the Middle Age scientists had not yet 5. Such advances as ... laid the foundation for later revolutionary progress in the development of drugs. 6. The works of the scientists of the 17-th and 18-th centuries

Exercise 2. Ask your colleague questions concerning:

- history of pharmacy, the people who contributed to the development of pharmacy and their scientific interests;
- medicines of the early period of civilization.

Exercise 3. Comment on the following. Make use of the following introductory phrases:

In my opinion. As far as I know. I believe/ suppose. One can assume that. It is widely believed that. It cannot be doubted that.

- The wider study and knowledge of plants owe more to the use of them in medicine.
- The advances in the techniques of the pure sciences of chemistry and physics helped on the development of botany.
- The name of Linnaeus (L. or Linn) occurs after the specific name of very many plants.

Exercise 4. Prove that:

- a) drugs were prescribed in ancient times;
- b) in the Middle Ages science declined in Europe;
- c) important advances in pharmacology were made during the 1500's and 1600's;
- d) the drug revolution began about 1800's.
- e) university laboratories made major contribution to progress in science.

Exercise 5. Make up a plan of the topic and get ready to speak about "History of pharmacy".

SECTION 2

Topic for reading and discussion

"PHARMACEUTICAL SCIENCES"

Grammar: Participle I and Gerund. Simple forms.

PART I. Structure Recognition

Exercise 1. Study the translation patterns of Participle I and the Gerund and practise in translating some examples given below.

Participle I	<p>1. a) Drugs <u>having</u> their origin in plants, are very popular</p> <p>b) Many students from <u>developing</u> countries study here.</p> <p>2. <u>Distilling</u> water, we produce a pure substance.</p>	<p>1. а) Лекарства, <u>имеющие</u> растительное происхождение, очень популярны.</p> <p>б) Многие студенты из <u>развивающихся</u> стран учатся здесь.</p> <p>2. <u>Дистиллируя</u> воду, мы производим чистое вещество.</p>
Gerund	<p>1. He likes <u>reading</u>.</p> <p>2. The work was aimed at <u>preparing</u> drugs.</p> <p>3. <u>Understanding</u> their nature requires knowledge.</p> <p>4. Methods of <u>drying</u> herbs are well known.</p> <p>5. My task here was <u>collecting</u> medicinal herbs.</p>	<p>1. Он любит <u>читать</u> (чтение).</p> <p>2. Работа была направлена на <u>изготовление</u> лекарств.</p> <p>3. <u>Понимание</u> их природы требует знаний.</p> <p>4. Методы <u>сушки</u> лекарственных трав хорошо известны.</p> <p>5. Моя задача здесь заключалась в <u>сборе</u> лекарственных трав.</p>

- a) The art of using particular remedies, to restore the process by introducing a chemical agent, the effect of improving the general state of health, his biological understanding, gardens for growing medicinal herbs, the instrument for measuring temperatures, identifying the properties of plants is rather difficult.
- b) Students from every country visiting Göttingen, many factories grew from existing pharmacies, pharmacy administration dealing with prescription pricing, methods for inert materials including statistic procedures.

Exercise 2. Define Participle Constructions:

His biological understanding, following the discovery of antibiotics, methods of drying herbs, during the following period, students taking the first years of their course at University college, a many-storey building, research developing the release of the active ingredients, factors influencing the development of the pharmaceutical effects, this involves isolating and investigating the active substances, classification according to the properties, tablets containing a highly active prescription drug, without requiring any prescription.

Exercise 3. Translate into English using Participle I or Gerund.

Методы сушки; администрация аптеки, имеющая дело с таксономией рецепта (prescription pricing); методы исследования инертных материалов, включающие статистические процедуры; восстановить реакцию путем введения химического агента; студенты многих стран, посещающие этот университет; вещества, происходящие из растений; лекарственные продукты, требующие сложных методов изготовления; после изготовления этого лекарства; при изготовлении этого лекарства; прибор для измерения температуры; при получении новых препаратов.

Exercise 4. Compare these two ways of saying the same thing:

A 1) When we had made it	B 1) After making it
2) When we made it	2) On making it

In science B is usually used. Transform the sentences using after, on/ing as in example B.

1. A small proportion of a nonvolatile solvent was added when we had evaporated the solution to 30 per cent.
2. Pharmaceutical preparations show a high degree of purity when the manufacturing pharmacist uses modern techniques.
3. After Pasteur had carefully examined hundreds of samples, he came to the conclusion that the type of decomposition was caused by living organisms.
4. When they have done the necessary work in physics, chemistry and biology at school, they take at once the second year of the course at the university.
5. When we purify drinking water, we pass it through the filter in the reservoirs.

6. Water is chlorinated after it has passed through the filter in the reservoirs.
7. After he had developed a number of methods for preparing chemical compounds he recommended the introduction of many chemical substances into materia medica.

Exercise 5. Translate, paying attention to Gerund.

1. After finishing the experiments, we wrote down the results.
2. On reading this article, he made up his mind (решиться) to translate it into Russian.
3. After returning to Moscow, he resumed his work.
4. Only after having applied force, we could change the volume and the form of a solid body.
5. After proving that his theory was correct, he started studying ways and means of improving the conditions of work.
6. After being corrected by the teacher, the students' papers were returned to them.
7. On being told the news, she turned pale.
8. The patient felt much better after being given proper treatment.

Exercise 6. Shorten the relative clauses as in example B.

- A.** Here is the small piece of metal which weighs more than 700 grams.
B. Here is the small piece of metal weighing more than 700 grams.

1. A mercury thermometer consists of a glass tube which has a bulb at one end.
2. The part of a pharmaceutical curriculum, which plays an important role as the connection between pharmacology on the one hand and between a pharmacy and pharmaceutical administration on the other is pharmacognosy.
3. Pharmacognosy deals with the use of drugs and substances which affect the health of man and animals.
4. Ancient people took the gold that in their view point gave the protection against some diseases for a magic talisman.
5. The students that study in the first year of their course at University College must do the necessary work in physics, chemistry, biology and mathematics.
6. Chemical properties that influence the performance of the dosage forms are investigated in various laboratories.

PART II. Vocabulary Learning

Exercise 1. Read the words of the Latin and Greek origin and try to translate them using your experience in the Russian, Latin and English languages.

Pharmacology [fɑ:məkɔ'lɔdʒi], pharmacological [fɑ:məkɔ'lɔdʒikəl],
 structure [stɹʌktʃə], mechanism [ˈmekənɪzəm],
 toxicology [tɔksɪkɔlədʒi], pharmacodynamics [fɑ:məkɔ'daɪnæmɪks],
 modern [mədən], distribution [dɪstɹɪ'bju:ʃən],
 identification [aɪ,ɪdenti'feɪʃən], identify [aɪdenti'faɪ],
 allergen [ælədʒən], antibiotic [æntɪ'baɪɔtɪk], immune [ɪ'mju:n],
 immunizing [ɪmju:'naɪzɪŋ], interest [ɪnt'rest],
 therapeutics [θerə'pjʊ:etɪks], trauma ['trɔ:mə],
 degeneration [di,dʒenə'reɪʃən], invasion [ɪn'veɪʒən], virus [vɪərəs],
 bacterial [bækt'ɪəriəl], function [fʌŋkʃən], restoration [restə'reɪʃən],
 restore [rɪ'stɔ:], nitric [naɪ'trɪk], association [ə'səʊsɪ'eɪʃən],
 associate [ə'səʊsɪ'eɪt], morphine ['mɔ:fi:n],
 popular [pɒ'pjʊlə], castor oil [kɑ:stə'ɔɪl],
 magnesium sulphate [mæɡ'nɪzjəm sʌlfet],
 hormone ['hɔ:moun], tuberculosis [tju:bə'kjʊ'lʊsɪs].

Exercise 2. Read and translate a) nouns and b) adjectives formed from verbs.

A : Verb	B : Noun	A : Verb	B : Adjective
discover -	discover - y	act -	act - ive
develop -	develop - ment	indicate -	indicat - ive
require -	require - ment	communicate -	communicat - ive
assist -	assist - ance	effect -	effect - ive
tolerate -	toler - ance	connect -	connect - ive

Exercise 3. Test whether you remember the active vocabulary of the English for the students of pharmacy.

Make up sentences of your own with some of this words:

require	treat	identify
drug	administer	contribute
evaluate	administration	improve
evaluation	affect	preserve
maintain	poison	application
preservation	disease	apply
property	deal with	animal

Exercise 4. Read and memorize the words of the active vocabulary:

a) words connected with the specification of a medicine:

derivative [dɛ'rɪvətɪv], a	- производное (вещество);
posology [pə'sɒlədʒɪ], n	- позология, дозировка, учение о дозировке;
susceptibility [sə'septə'bɪlɪtɪ], n	- чувствительность;
level [ˈlevl], n	- уровень;
exert an action [ɪ'gʒə:t], v	- влиять;
influence [ɪnfluəns], v	- влиять, оказывать влияние;
select [sɪ'lekt], v	- отбирать.

b) words connected with the treatment or diagnosis:

response [rɪs'pɒns], n	- ответ, реакция;
tissue [ˈtɪʃju:], n	- ткань;
stimulate [ˈstɪmjuleɪt], v	- стимулировать;
trauma [ˈtrɔ:mə], n	- травма;
mental disorder [ˌmentɪ'dɪs'ɔ:də], n	- психическое расстройство;
degeneration [dɪ'dʒenə'reɪʃən], n	- перерождение, дегенерация;
invasion [ɪn'veɪʒən], n	- инвазия, вторжение.

c) words connected with pharmaceutical manufacture:

art [ɑ:t], n	- умение, способ;
flavor [ˈfleɪvə], n	- аромат, запах.

d) medical terms connected with the classes of drugs:

psychotropic [ˌsaɪkə'trɒpɪk], n	- психотропный;
allergy [ˈælɪdʒɪ], n	- аллергия;
adrenal cortex [æd'rɪnəl'kɔ:teks], n	- кора надпочечников;
immunize [ɪmju:'naɪz], v	- иммунизировать;
spasmodic [spəz'mɒdɪk], a	- спазматический;
anthelmintic [ˌænthel'mɪnɪk], n	- противоглистное средство.

e) general scientific and neutral words:

avoid [ə'vɔɪd], v	- избегать;
promote [prə'məʊt], v	- ускорять, содействовать;
largely [ˈlɑ:dʒɪlɪ], adv	- в значительной степени;
initial [ɪ'nɪʃəl], a	- начальный;
values [ˈvælju:], n	- ценности;
combat [ˈkɒmbæt], v	- сражаться, бороться;
imply [ɪm'plaɪ], v	- значить, предполагать;
define [dɪ'faɪn], v	- определять;
design [dɪ'zeɪn], v	- предназначать, задумывать;
improve [ɪm'pru:v], v	- улучшать;

abroad. 3. There are labels of four colors for the drugs prepared at the chemist's: labels of a green color ... medicines for internal use; blue labels... drugs used for injections. 4. The single dose and the total dosage are ... on the label or the signature. 5. He ... by experiments on dogs that most of the narcotic activity of opium was dependent upon morphine. 6. It was ... that 100 parts of starch gave about 110 parts of glucose. 7. Samples of water taken from different sources (rivers, lakes, etc.) ... that they are quite different.

Check up your choice:

1. demonstrates. 2. showed. 3. indicate. 4. indicated. 5. showed. 6. prove. 7. illustrate.

Exercise 9. Read the text and give definitions of the italicized notions, answering the questions which follow it.

Pharmacy is the science which treats of medicinal substances. It speaks not only of medicines but of their combinations, analysis and standardization. The word "pharmacy" is also used to designate the place where medicines are compounded, dispensed and sold. To become a pharmacist one should achieve knowledge of different subjects, such as physics, chemistry, botany etc.

Physics is that science which treats of the phenomena associated with matter in general, especially its relation to energy. **Chemistry** is that science which explains the composition of matter and the transformations which it undergoes.

Botany is the science that treats of plants with reference to their structure, function and classification. **Pharmacognosy** is the science which embraces the history, source, cultivation, collection, preparation, identification, composition and preservation of drugs of vegetable and animal origin. The field of medicine which studies drugs, their nature, origin, and effect in the body is called **pharmacology**. Pharmacology is a large medical specialty and contains many subdivisions of study, including pharmacodynamics, molecular pharmacology, chemotherapy and toxicology

Pharmacodynamics involves the study of how drugs exert their effects in the body.

Molecular pharmacology concerns the study of the interaction of drugs and cells or enzymes. These studies provide important information about the mechanism of action of the drug.

Chemotherapy is the subdivision of pharmacology which studies drugs that are capable of destroying microorganisms, parasites and cells within the body without destroying the body itself.

Toxicology is the study of harmful chemicals and their dangerous effects on the body.

1. What is pharmacy? 2. What is physics? 3. What is chemistry? 4. What is botany? 5. What is pharmacodynamics? 6. What is pharmacology? 7. What is pharmacognosy? 8. What is molecular pharmacology? 9. What is chemotherapy? 10. What is toxicology?

PART III. Reading Comprehension

Read and translate text 1. Choose the words of the active vocabulary. Explain the emphasized words.

TEXT 1

PRESENT DAY PHARMACY

Pharmacy deals with drugs and people. Drugs are complex substances of chemical or plant origin, having complex pharmacological properties. Understanding their structure, properties and the mechanism of their action requires a high degree of chemical and pharmacological knowledge. Therefore pharmacy includes a number of sciences studying drugs from different aspects. They are pharmacognosy, pharmacology, toxicology, pharmaceutical chemistry, pharmacodynamics, etc. We shall try to define only some of them.

Pharmacognosy deals with plants and animal drugs and their constituents. The name "pharmacognosy" is formed from two Greek words: "pharmakon" – drug and "gnosis" – knowledge. It is a study of drugs of plant and animal origin. Modern aspects of the science include the study not only of the crude drugs but also their natural derivatives.

In a broad sense, pharmacognosy deals with the history, distribution, cultivation, collection, selection, preparation, commerce, identification, evaluation, preservation, and use of drugs and substances affecting the health of man and other animals. Such drugs include a variety of medicinal products often requiring complicated methods of preparation: allergens, allergenic extracts, antibiotics, immunizing biologicals, flavouring agents, etc.

In other words, the definition of pharmacognosy implies a particular knowledge of methods of identification and evaluation of drugs.

As a part of pharmaceutical curriculum, pharmacognosy plays an important role as a connecting agent between pharmacology and pharmaceutical chemistry on the one hand and between pharmacy and pharmaceutical administration on the other. Methods of collection, curing, drying and assaying affect the price of drugs; thus, pharmacognosy is associated with pharmacy administration dealing with prescription pricing.

Pharmacology is an integral part of modern pharmacy curriculum. It is the study of the response of living tissues to chemical substances with a special interest in improving therapeutics. Therapeutics is the art of using particular

remedies in particular diseases. Pharmacology is an experimental science, a branch of biology, biochemistry and pathology, but with a special link with organic chemistry. It is pharmacology in this sense that* is having so great an effect on medicine today.

An important division of pharmacology is **posology**. Once Paracelsus, a Swiss physician, a contemporary of Columbus, Martin Luther and Michelangelo, wrote: "Poison is everything, and no thing is without poison. The dosage makes it a poison or a remedy". Doses vary with individual tolerance and susceptibility.

The process of life may be altered by trauma, degeneration or the invasion of viruses or bacteria. Illness is the distortion of the normal cell life or function. Frequently it is possible to restore the process to a norm by introducing a chemical agent of designed structure into the system. Such an agent is a drug and its application is pharmacology.

Note:

* It's ... that – именно.

Exercise 1. Find the equivalents of the next word combinations:

Оценка лекарств, администрация аптеки, таксономия рецепта, улучшение терапии, особые лекарства, специфическая связь, химический агент запрограммированной структуры, нарушение жизнедеятельности нормальной клетки, иммунизирующие биологические вещества.

Exercise 2. Match the adjectives and nouns to make phrases used in the text.

Adjectives: chemical, medicinal, individual, vegetable and animal, harmful, particular, natural.

Nouns: agent, tolerance, derivatives, substances, origin, disease, chemicals.

Exercise 3. Agree or disagree with the following statements:

1. Drugs are simple substances of chemical or plant origin. 2. A high degree of chemical and pharmacological knowledge is needed to understand the structure, properties and mechanism of action of a drug. 3. Pharmacology deals with plants, animal drugs and their constituents. 4. Pharmacognosy implies a particular knowledge of methods of identification and evaluation of drugs. 5. Pharmacognosy is not associated with pharmacy administration dealing with prescription pricing. 6. Therapeutics is the art of using particular remedies in particular diseases. 7. Posology is an important division of pharmacology.

Exercise 4. Complete the following sentences according to the text:

1. Modern aspects of the science include ...
2. Such drugs include a variety of medicinal products ...
3. The definition of pharmacognosy implies ...
4. Pharmacology is the study of the response of living tissues ...
5. Therapeutics is the art of ...
6. It is possible to restore the process to a norm ...

Exercise 5. Answer the questions to text 1.

Begin your answers with *I think (that) ...*

I suppose (that) ..., I know (that) ..., I consider (that) ...

1. What things of environment does pharmacy deal with?
2. What is necessary to become a specialist in pharmacy?
3. What sciences does pharmacy include?
4. What do you know about pharmacognosy?
5. What do modern aspects of pharmacognosy include?
6. Why do medicinal products require complicated methods of preparation?
7. What is the role of pharmacognosy in the pharmaceutical curriculum?
8. What methods influence the price of drugs?
9. What is the difference between pharmacology and pharmacognosy?
10. What science exerts a greater effect on medicine today: pharmacognosy or pharmacology?
11. How can you define a disease (illness)?
12. How can you define a drug?

Exercise 6. Read the text «Отец фармации» and retell it in English. Use the words:

обширные познания – profound knowledge	кислый – sour
лечебное дело – materia medica	кладовая (аптека) – an apothecary
пилюля – a pill	сборщик сырья – herbalist
порошок – a powder	алхимик – alchemist
мазь – an ointment	проба Галена – Galen's test
сбор – herbal tea	Галена большая вена – Galen vena cava
влажность – moisture	схоластическое направление – scholastic school
горький – bitter	

ОТЕЦ ФАРМАЦИИ

В истории науки отцом медицины признан выдающийся врач Древней Греции Гиппократ. Отца же фармации почти не вспоминают. Однако есть убедительные основания считать таковым известного врача и фармацевта Древнего Рима Галена. Он обладал обширными

познаниями в фармации и медицине, оставил более 150 трудов не только по лечебному делу и фармации, но также по анатомии, физиологии и другим наукам.

Клавдий Гален внес много нового в развитие опытной фармации: для приготовления лекарств он использовал 304 вида растений, 60 земель и металлов, 80 животных средств. Он стал основателем экспериментального метода в фармации, применял механическую и физико-химическую обработку природного сырья, предложил ряд методов для приготовления лекарственных препаратов, ввел новые лекарственные формы. В его трудах «О составе лекарств», «Терапевтические методы» и др. представлены начала галеники.

Гален внедрил новые формы препаратов: пилюли, порошки, мази, соки, сборы, компрессы, вина, растительные масла и т.п. По действию лекарства делил на простые (действия холодом, теплом, влажностью), сложные (со свойствами горькое, сладкое, кислое) и специфические.

Для хранения сырья выделил кладовую (по-гречески аптека), работника в ней называл аптекарем, заготавливающий сырье был сборщиком. Позже появился фармацевт (от греческого – мастер, приготовляющий лекарства).

С именем отца фармации связаны многие понятия: галеновые и негаленовые препараты (это название дал врач и алхимик Парацельс в XVII в.); галеника – изготовление и применение галеновых препаратов; проба Галена, Галена большая вена; галенофармацевтическая промышленность; галенизм – схоластическое направление медицины в эпоху средневековья.

Read text 2 and be ready for a comprehension check-up.

TEXT 2

GENERAL PHARMACOLOGY

1. **Pharmacology** studies not only the response of living tissue to chemical substances but also the selective biological activity of chemical substances on living matter. It is determined that any substance may have a biological activity. When taken in small doses it initiates cellular and subcellular changes. It is selective when the response occurs in some cells and not others. Pharmacology is concerned with the nature of these selective changes, the systematization of the responses and the chemicals that cause them and the mechanism whereby these changes are brought about.

2. Many chemicals possess selective activity of value in the treatment of disease. Strictly speaking, these are drugs, and their use is part of therapeutics. Historically interest in drugs and their effects has been closely associated with medicine. Today, the need for new compounds with selective activity useful in combating diseases is still very strong and stimulates and accelerates further investigation and research. Although modern pharmacology is still closely associated with medicine, it depends largely upon the basic physical, chemical and biologic sciences for theory and technique.
3. Selectivity of action may be observed at different levels of biologic organization. For example, antibiotics act on one species but not another; general anesthetics act on one organ system but not another; morphine acts on one part of an organ but not another. Most commonly used drugs, except for antibiotics, are classified according to the organ systems on which they exert their chief selective action.
4. One of the first books published on pharmacology was **John Ayrton Paris's Pharmacologia** (1812). He was a physician at Westminster Hospital and gave a course of lectures in London on *Materia Medica*. He was so popular that in 1819 the Royal College of physicians appointed him to their new chair in *Materia Medica*. He assisted in the preparation of the *Pharmacopoeias* of 1823, 1824 and 1836 and was president of the College from 1844 till his death in 1856.
5. The fifth edition of *pharmacologia* (1823) gives a full description on the first isolation of morphia (by Sertürner in 1806) and of the series of alkaloids - strichnine, brucine, veratrine, guanine, emetine, isolanine, atropine, etc.- the isolation of which was due to this discovery. In the *Pharmacologia Paris* records that morphia is purer than opium and less addictive, and that tolerance could be avoided by varying the salts of morphine.
6. Many new medicines are fully described in this edition. For example, ether is described as highly valuable stimulant, narcotic and antispasmodic; a teaspoonful in a glass of water can "instantly relieve vertigo." Belladonna is a powerful sedative and narcotic, relieves local pains very effectively. Coichicum is a diuretic and a specific for gout, also possessing an action on the arterial system. Iron salts are tonic, astringent, anthelmintic.
Magnesia is antacid. Castor oil, sodium and magnesium sulphate, sodium bicarbonate, and some other inorganic salts are also there.
7. A number of drugs described here serves to represent the strength of *materia medica* of the period which further gave rise to modern pharmacology.

Lines to the text:

1. Royal College - колледж, находящийся под покровительством королевской семьи.
2. vertigo [ˈvɜːtɪɡu] - головокружение.

Exercise 1. *Agree, partly agree or disagree with the following sentences:*

1. Pharmacology studies both the response of living tissue to chemical substances and the selective biological activity of chemical substances on living matter.
2. Today the need for new compounds with selective activity is not very strong.
3. Modern pharmacology is closely associated with physics, chemistry and biology.
4. Modern pharmacology is not associated with medicine at all.
5. Most commonly used drugs are classified according to the organ systems on which they exert their chief selective action.
6. One of the first books published on pharmacology was written by a physician at Westminster Hospital.
7. John Ayrton Paris's Pharmacologia gave rise to modern pharmacology.
8. The first edition of Pharmacologia by John Paris's gave a full description of the first isolation of morphia by Sattürner.
9. Many new medicines were fully described in the 5th edition of Pharmacologia.
10. Inorganic salts were also described in the 5th edition of Pharmacologia.
11. Ether is described as highly valuable stimulant.
12. Belladonna is a very powerful sedative.

Exercise 2. *Insert the missing parts of the sentences referring to text 3.*

1. Colchicum is a diuretic also possessing an action on the arterial system.
2. The need for new compounds useful in combating diseases is still very strong and stimulates further investigation and research.
3. Most commonly used drugs are classified according to the organ systems on which they exert their selective action.
4. In small doses it initiates cellular and subcellular changes.
5. Belladonna relieves local pains very effectively.
6. Many new medicines are fully described.

Exercise 3. *Give definitions of the following notions in one sentence:*

1. Belladonna;
2. antibiotics;
3. general pharmacology;
4. pharmacopoeia;
5. colchicum.

Exercise 4. *Study sentences 1, 2 then complete sentences 3, 4.*

1. The first paragraph is concerned with the object of pharmacological studies.
2. The second paragraph is concerned with some specific properties.

3. The third paragraph is concerned with selectivity of action 4. The fourth paragraph

Read text 3 and be ready for a comprehension check-up.

TEXT 3

DEVELOPMENT OF PHARMACEUTICAL SCIENCE IN THE 20TH CENTURY

1. The progress in pharmacy was marked by the work of **Ehrlich**¹ on the selective bactericidal action of certain azo-dye-chemicals. **Sulphonamides** which made a real revolution in medicine were developed based on this work.
2. Antibacterial agent penicillin was discovered and described by **Fleming**² in 1929 and **penicillin** was isolated later, in 1940.
3. In 1944 **streptomycin** was isolated and proved to be effective against tuberculosis. Following the discovery of penicillin and streptomycin, many new antibiotics have been isolated and as a result of this research, many potentially dangerous infections can now be treated successfully.
4. **The concept of hormone** appeared at the beginning of the 20th century. More than thirty hormones have been produced from the adrenal cortex. It was observed that one of the corticosteroids (later named cortisone) exerts an anti-inflammatory action. This discovery stimulated a great deal of research into this group of compounds.
5. The discovery of **vitamins** had the effect of greatly improving the general state of man's health. In 1911 **Funk** who succeeded in producing an extract of rice effective against beri-beri introduced the term "vitamin". In 1933 vitamin C was synthesized and in 1937- vitamin A.
6. The discovery and exploitation of **alkaloids** had a profound effect on drug research. The German pharmacist **Sertürner** isolated the first alkaloid from opium in 1806. Isolation of codeine and papaverine followed later.
7. New classes of **antihypertensive agents** and **psychotropic drugs** were discovered as a result of investigations into a group of compounds derived from reserpine, a rauwolfia alkaloid.
8. The English physician **Whitening** recognized the pharmaceutical importance of **digitalis** at the end of the 18th century. But active principles of the plant were isolated in 1926. They were crystalline

glycosides digitoxin, gitoxin, gitalin and as a result of this discovery, treatment became really effective.

9. Since 1950 there have been important advances in the development of **psychotropic agents** and drugs like chlorpromazine and other phenothiazine have completely revolutionized the management of mental disorders.

Notes to the text:

1. Ehrlich Paul (1854-1915) - немецкий врач, фармаколог.
2. Fleming, Sir Alexander (1881-1955) - лауреат Нобелевской премии, создатель пенициллина.

Exercise 1. Answer the questions to text 3.

1. What discovery was made at the end of the eighteenth century?
2. What alkaloid was isolated in 1904?
3. What was made in 1911?
4. What substances were isolated in 1926?
5. What substance was discovered in 1929?
6. What substance was synthesized in 1933 and in 1937?
7. What substance was isolated in 1940?
8. What progress has been achieved since 1950?

Exercise 2. Study sentences 1, 2, 3 and then complete the following sentences:

1. Paragraph 1 tells the reader about the development of sulphonamides.
2. Paragraph 2 is concerned with the discovery made by Fleming.
3. Paragraph 3 is about the fact that following the discovery of penicillin and streptomycin many other new antibiotics have been investigated.
4. Paragraph 4 ...
5. Paragraph 5 ...
6. Paragraph 6 ...
7. Paragraph 7 ...
8. Paragraph 8 ...
9. Paragraph ...

Exercise 3. Answer the questions to text 3. Try to use introductory phrases to underline your opinion and own experience:

It seems to me (that) In my opinion I think (I don't think) that I consider From my experience I know that

1. What is called "a real revolution in medicine"?
2. What was the next stage of the "revolution in medicine"?
3. What do you know about the action of hormones on the man's organism?
4. What can you say about the action of vitamins on the organism?
5. To what groups of medicines do morphine, opium and papaverine refer?
6. What do you know about the history of digitalis?
7. Do you know anything about the action of digitalis?

PART IV. Speech Exercises

Exercise 1. Complete the sentences using the material of the topic "Pharmaceutical sciences".

1. I think that pharmacy 2. In my opinion, pharmacology deals with
 3. To understand the role of pharmacy in the society 4. In the early period it was commonly believed that 5. It was considered that many illnesses 6. The works of the scientists of the seventeenth and eighteenth centuries 7. Today the need for new compounds 8. Medicine and pharmacy

Exercise 2. Answer the questions with one, two or more sentences.

1. What do you think of the discovery of antibiotics? 2. What can you say about the discovery of vitamins? 3. What advances revolutionized the management of mental disorders and other diseases? 4. What is your opinion about the importance of the pharmacopoeia? 5. Who of the scientists of the 18th-20th centuries mentioned in Text 3 produced the deepest impression on you? 6. Do you think that the drug is the only panacea for all the diseases? 8. What drug made a revolution in medicine at the beginning of the twentieth century?

Exercise 3. Express in some sentences the idea about:

1. the object of study of pharmacognosy and its place in the pharmaceutical sciences; 2. the object of study of pharmacology and its connection with other sciences; 3. illness and possibility of its treatment; 4. medicines of the early period of civilization; 5. famous scientists who contributed to the development of pharmacy; 6. selective activity of drugs; 7. publication of pharmacopoeias; 8. drugs that made a revolution in medicine.

Exercise 4. Comment on the following statements. Try to use introductory phrases to underline your opinion and own experience: thus; in other words; on the one hand; on the other hand; exclusively; strictly speaking; therefore.

1. University laboratories make major contributions to progress in science. 2. Modern pharmacology is closely associated with medicine. 3. Thanks to pharmacopoeias many old drugs are still in use today. 4. Pharmacy deals with drugs and people. 5. Vitamins greatly improve general state of man's health.

Exercise 5. Prove that:

- a) a drug may cure and may kill;
- b) Paracelsus, a Swiss physician, a contemporary of Columbus, Martin Luther and Michelangelo B. was right when he said: "The purpose of chemistry is not to make gold but to study the fundamental sciences and turn them against diseases";
- c) Pharmacognosy plays an important role as a connecting agent between pharmacology, pharmaceutical chemistry and pharmacy administration.

Exercise 6. Ask your friend (colleague) in English:

включил ли ваш коллега в свой доклад информацию об истории открытия пенициллина; указал ли он, когда были открыты другие антибиотики и их эффективность; какие потенциально опасные болезни могут лечиться успешно антибиотиками; уделил ли он внимание открытию витаминов и алкалоидов; какие антигипертензивные вещества указаны в его сообщении; отметил ли он дату, когда были достигнуты крупные успехи в развитии психотропных веществ.

Exercise 7. Ask your colleague (friend) questions concerning:

- a) present day pharmacy: the sciences that it includes, their origin and their contents;
- b) history of pharmacology, the first editions of books on pharmacology and their contents;
- c) the progress in pharmacy, discovery of penicillin, vitamins, alkaloids, antihypertensive drugs.

Exercise 8. Get ready to speak on the topic "Pharmaceutical sciences and their role in training specialists in pharmacy".

SECTION 3

Topic for reading and discussion

"DISCOVERY AND DEVELOPMENT OF NEW MEDICINES"

Grammar: Conditional sentences (Conditionals)

PART I. Structure Recognition

Conditionals

When you make a plan for the future, suppose or predict something and you are fairly certain about its realization, though there are some obstacles, use the formula of a **REAL CONDITION** clause:

Type I	Real condition	<i>will do smth. if-<u>does</u></i>
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If the patient takes the drug regularly, his temperature will return to normal.

When you are not sure in what you plan or suppose because of unfavorable conditions (at present or in future) use the formula of an **UNREAL CONDITION** clause:

Type II	Unreal condition	<i>should (would) could might</i> } <i>do smth. if- <u>did</u> were</i>
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What would you do, if you won a million of pounds?

If we didn't go to their party next week, they'd (would) be angry.

We might act differently, provided we knew what was about to happen.

If it stopped raining, we could go out.

Remember! In "if" sentences and after "wish" you can use were instead of was.

If I were you, I wouldn't behave in such a way.

I wish I were taller.

When you regret something that happened or didn't happen in the past use the following formula of an **UNREAL CONDITION** clause:

Type III	Unreal condition	<i>should (would) have done smth. if- <u>had done</u></i>
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If I had known that you were ill, I should have gone to see you.

If I'd seen (=had seen) you, I'd have told (would have told) you the news.

I wish I had been taught a foreign language since childhood.

Mixed type	Split condition	<i>should (would) do smth. if-<u>had done</u> should (would) have done if- <u>did</u></i>
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The drug problem would be manageable, if cannabis had been absolutely prohibited 30 or 35 years ago.

I should have done the same, if I had to make the choice again.

Exercise 1. Read the sentences and define the type of Conditional sentences. Translate them into Russian.

1. If cold water is slowly warmed, the bubbles of dissolved air are observed.
2. If the ozone is suddenly withdrawn from the atmosphere, we shall be killed within a few minutes by the sun's ultra-violet light.
3. Things would be infinitely worse, if animal tests were stopped.
4. If the injection of penicillin is given promptly on the hour, it will be very effective.
5. If cancer had been revealed on its early stage, the operation would have been successful.
6. If the water surface is colder than the dew-point temperature, evaporation is negative and condensation begins.
7. If water were added to the mixture, more solution would be formed.
8. If they had attempted to prepare hydrogen bromide in a test-tube with a concentrated sulphuric acid, the results would have been better.
9. If the acid (e.g. phenol) or the base (e.g. aniline) is very weak, a highly alkaline and highly acid end-point will result.

Exercise 2. Put the verbs in the correct form according to the models.

Model A: If I were offered a job, I think I ... (take) it. If I were offered a job, I think I should take it.

1. If that research laboratory were closed, many people ... (be out of work).
2. If you explained the situation to her, I'm sure she ... (understand it).
3. If I had time to do all things I want to, I ... (begin) with reading, I ... (read) a lot).
4. If I had time and money, I ... (travel) all over the world.
5. If you read English books in the original, it ... (do) you a lot of good.

Model B: They would be rather angry, if you ... (not / visit) them. They would be rather angry, if you didn't visit them.

1. Life would be easier, if everyone ... (be good and kind).
2. I should be more lucky, if I ... (know) the answer.

3. If I ... (to make) an appointment to see the dentist, I should do my teeth.
4. If wood ... (be treated) with certain chemicals, it would be used for some purposes instead of metal.
5. If I ... (be) you, I should make him do his work properly.

Model C: If we had kept this gas in a special vessel, it ... (not / evaporate). If we had kept this gas in a special vessel, it wouldn't have evaporated.

1. If she had asked me, I ... (help) her.
2. If the whole effect had been traced to this cause, then our assumption ... (be corrected).
3. If she had returned home earlier, we ... (ask) her a few questions.
4. We ... (not achieve) such impressive results, if we hadn't worked on this design for hours.
5. You friend should have seen a doctor long ago. If he had taken treatment, he ... (get) well already.

Model D: If I ... (know) that you were ill, I should have gone to see you. If I had known that you were ill, I should have gone to see you.

1. If we ... (persuade) him to apply another procedure, we should have obtained satisfactory results.
2. If we ... (talk) him out of going to the country, he would not have caught cold.
3. He would have attended to the problem himself, if he ... (not/fall) ill.
4. You would have dealt with this matter in the proper way, if you ... (read) a lot of articles concerning the subject.
5. The professor thought that you should not have stopped the work. If you ... (make) another effort, it might have been successful.

Exercise 3. Answer the questions using Conditionals.

Model 1: What will you do, if he's out? (Call him tomorrow). If he's out, I'll call him tomorrow.

1. What'll happen if he doesn't hurry? (Miss the train).
2. What'll you do if he's working? (Disturb him).
3. What'll you do if he isn't at home? (Leave a message).
4. What'll you do if you can't get an air ticket? (Go by train).

Model 2: What would you do, if you saw him? (Apologize to him). If I saw him, I should apologize to him.

1. What would you do, if you were in my position? (Act differently).
2. What would you do, if she were here? (Tell her the truth).
3. What would you do, if you didn't pass your examinations? (Make one more attempt).
4. What would you do, if you didn't hear from him? (Send him e-mail).

Model 3: What would you have done, if you had missed the bus? (Take a taxi). If I had missed the bus, I would have taken a taxi.

1. What would you have done, if you had been there? (Go for a swim).
2. What would she have done, if she hadn't received his letter? (Send a telegram).
3. What would you have done, if you had been in my position? (Sell the car).
4. What would she have done, if she had seen him earlier? (Make him change his mind).

Exercise 4. Change the following sentences according to the Model (use Type II Unreal Condition Sentences instead of Type I Real Condition Sentences).

Model: If the patient takes the drug regularly, his temperature will return to normal. => If the patient took the drug regularly, his temperature would return to normal.

1. If he is in the laboratory now, he will make this experiment.
2. If the solution is saturated with oxygen, some carbon monoxide may be formed.
3. If the patient is given an injection of 1% promedol and 0.1% atropine, the pain will immediately subside.
4. If cold water is slowly warmed, they will observe the bubbles of dissolved air.
5. If chlorine is passed into a cold solution of sodium hydroxide, a mixture of chloride and hydrochloride of sodium will be formed.
6. If the insoluble barium salts are removed by filtration, we shall obtain a diluted solution of hydrogen peroxide in water.

Exercise 5. *Try to imagine what our world would be like, if*

- ... penicillin hadn't been discovered;
- ... vaccines hadn't been invented;
- ... animals hadn't been used in scientific research;
- ... vitamins hadn't been synthesized;
- ... important advances in development of psychotropic agents hadn't been made;
- ... medicinal plants hadn't been grown in universities botanical gardens;
- ... computer hadn't been invented.

Say what you would do, if ...

- ... you were told you had won a sum of money;
- ... you were told you'd got a very high grade in an exam;
- ... you had a bad toothache and your neighbor was making a lot of noise late at night;
- ... nothing seemed to have gone right for you that day;
- ... you caught an awful cold;
- ... you had a fever and a terrible headache.

PART II. Vocabulary Learning**Exercise 1.** *Read and memorize the words of the active vocabulary.**a) words connected with specification of a medicine.*

administration [əd,mɪnɪs'treɪʃ(ə)n], n	- назначение, введение или прием лекарственного средства;
pharmaceutical formulation [fɑ:mə'sju:tɪkəl]	- технология приготовления лекарственного средства;
indicate ['ɪndɪkeɪt], v	- указывать, показывать;
contraindication [kɒn'traɪ,ɪndɪ'keɪʃən], n	- противопоказания;
check [tʃek], v	- проверять, контролировать;
adverse [əd've:s], a	- неблагоприятный, вредный;
precaution [pri'kəʊʃ(ə)n], n	- предосторожность, мера предосторожности;
ultimate [ʌl'tɪmɪt], a	- конечный, отдаленный;
warning [wɔ:nɪŋ], n	- предупреждение.

b) words connected with treatment and diagnosis.

disease incidence ['ɪnsɪdəns], n	- заболеваемость, частота, распространенность заболевания, число заболевших;
management ['mænɪdʒmənt], n	- лечение, управление процессом.

c) words connected with pharmaceutical manufacture

approval [ə'pru:vəl], <i>n</i>	- одобрение, утверждение;
raw material [rɔ:mə'tiəriəl], <i>n</i>	- сырье;
(finished)	- (конечное) лекарственное
pharmaceutical [fɑ:mə'sju:tikəl], <i>n</i>	вещество;
excipient [ik'sipiənt], <i>n</i>	- недействующая, индифферентная составная часть лекарства;
price [praɪs], <i>n</i>	- цена;
trial ['traɪəl], <i>n</i>	- испытания, проба;
stage [steɪdʒ], <i>n</i>	- стадия, этап.

d) general scientific and neutral words.

benefit ['benɪfɪt], <i>v</i>	- помогать, приносить пользу;
<i>n</i>	- выгода, польза, прибыль;
condemn [kən'dem], <i>v</i>	- осуждать, порицать;
cruel [kruəl], <i>a</i>	- жестокий, безжалостный, бессердечный;
conduct [kən'dʌkt], <i>v</i>	- вести, руководить (делом);
eventually [ɪ'ventʃəli], <i>adv</i>	- в конечном счете, в конце концов;
existence [ɪg'zɪstəns], <i>n</i>	- существование, жизнь;
in addition to [ə'dɪʃən]	- вдобавок, в дополнение к;
justify ['dʒʌstɪfaɪ], <i>v</i>	- оправдывать, находить оправдание;
mistreat [mɪs'tri:t], <i>v</i>	- дурно обращаться;
suffer from ['sʌfə], <i>v</i>	- страдать, испытывать.

Exercise 2. Read the words of the Latin and Greek origin and try to translate them using your experience in the Russian, Latin and the English languages:

Anesthesia [ænis'teɪzjə], block [blɒk], hypertension [ˈhaɪpə(ɪ)'tɛnʃən],
 commerce [ˈkɒməʃɪs], diabetes [ˌdaɪə'bi:ti:z], guarantee [ˌgærən'ti:],
 kinetics [kaɪ'netiks], thermodynamics [ˈθə:məʊdai'næmɪks], inert [ɪ'nɜ:t],
 chance [tʃɑ:ns], procedure [prə'si:dʒə], arteriosclerosis [ɑ:liəriəuskliərəʊsɪs],
 potentially [pə'tenʃəli], indication [ɪndɪ'keɪʃən].

contraindication [kɒntraɪndɪ'keɪʃən], concentration [kɒnsən'treɪʃən],
 toxic [tɒksɪk], volunteer [vɒlən'tiə], maximize [ˈmæksɪmaɪz], sex [seks],
 ethnic [ˈeθnɪk], utilize [ju:'tɪlaɪz], placebo [plə'si:bou], rubella [ru:'belə],
 pertussis [pə'tʌsɪs], poliomyelitis [ˌpɒliəʊmaɪnɪ'taɪtɪs], epilepsy [ˈepɪlepsi],
 mastitis [mæs'taɪtɪs], arthritis [ɑ:'θraɪtɪs], dementia [dɪ'menʃɪə],
 immunization [ɪ,mju:(ɪ)nə'zeɪʃən], cholera ['kɒləərə].

encephalitis [ˌɛnsɛfəˈlaɪtɪs], brucellosis [ˌbrʊsɛˈləʊsɪs].

Exercise 3. Form the adverbs from the given adjectives: Translate the obtained adverbs.

Model: Usual – usually, primary – primarily.

Experimental, rare, effective, rapid, exceptional, sufficient, different, additional, eventual, virtual, initial, reasonable, thorough, extreme, infinite, deliberate.

Exercise 4. Find synonyms to the verbs given in the list A and B. Choose the appropriate nouns which are given below to the verbs in the list A.

A

1. to utilize
2. to conduct
3. to handle
4. to participate
5. to intend
6. to benefit
7. to approve
8. to owe
9. to exist
10. to test

B

- a) to take part in
- b) to plan, project
- c) to be obliged
- d) to advance, improve
- e) to evaluate, check, assess
- f) to manage, treat
- g) to use, apply
- h) to authorize, permit, recommend
- i) to carry out
- j) to be (available)

Research, experiments, animals, studies, volunteers, target human population.

Exercise 5. Read the sentences and find the words of the active vocabulary. Translate the sentences into Russian.

1. An adverse reaction to drugs is the fourth largest cause of death in the United States.
2. Many animals are mistreated and others are hunted or eaten for pleasure.
3. If an animal experiment might save your dying best friend, would you condemn the experiment?
4. Finding cures for diseases and safety testing of products is important, but does the death of animals justify the means?
5. The clinical development includes details on action of the product: indication, contraindication, dosage, administration etc.

6. The development of new medicines passes through many stages, involving different sciences.
7. A great deal of research is being carried out to discover the benefits of regular exercise.
8. Nobody would deny the value of the work being done to find a cure for AIDS.

Exercise 6. *Translate the following word combinations:*

- a) cell physiologists, membrane transport, human trials, healthy human volunteers, target human population, research centers, test participants, health problems, prescription drug, product development, package research, process research chemists, process development engineers, quality control laboratory, safety testing of products;
- b) to use cells in tissue culture, to improve the technique, to spend time, to produce the purest product, to provide sufficient quantities of drugs, to be useful in treatment of hypertension, to conduct basic physiological research, to try the drug in experimental animals, to minimize the number of test participants, sufficient number of subjects of both sexes, to find cures for a disease.

Exercise 7. *Read and translate into Russian the words of the active vocabulary and their derivatives given in brackets:*

1. Persons who (страдают) from diabetes are often required to take daily injections of insulin. 2. From discovery to (одобрение) the development of a new drug takes, on average, nearly 12 years. 3. Once clinical (испытания) have been completed successfully, the test data are submitted to the Food and Drug Administration. 4. Taking a medication is making a conscious choice between the (польза) of the drug and the risks associated with its side-effects. 5. A fairly reasonable (цена) must be established for the new drug. 6. In an epidemic (частота случаев) of a disease is widespread. 7. Have you ever reacted badly to a medicine? Many people do. Some people even die when taking medicine meant to (вылечить) them. 8. Drugs are subject to an expensive and extensive screening process before they (могут быть одобрены) for sale and public use. 9. Some drug companies (в конце концов) succeeded in greatly reducing the androgenic effects of synthetic steroids, while not affecting the desired anabolic effects. 10. Results of animal tests must be submitted to the FDA for (проверки) before permission is granted to proceed to the next stage – clinical testing of the drugs on humans.

Exercise 8. Suggest English equivalents to the following Russian word combinations:

Разработка лекарств; улучшать методику; обеспечить достаточное количество лекарств; производить самый чистый продукт; проводить исследования; испытывать лекарство на животных; находить лекарство (средство) от болезни; быть пригодным для лечения гипертонии (диабета); иметь проблемы со здоровьем; испытания на людях; лекарство, выдаваемое по рецепту; посредством чего-либо; обращаться с кем-либо хорошо (плохо); цель оправдывает средства.

PART III. Reading Comprehension

Read and translate Text 1

TEXT 1

DISCOVERY AND TESTING OF NEW MEDICINES

The curative powers of certain chemicals have been discovered by various means, from lucky accidents to systematic investigation and from folk remedies to targeted research. However, the development of drugs, particularly in modern societies, generally follows a common set of steps.

The process usually starts with scientists conducting basic physiological research, often at cellular and molecular levels. Perhaps a new family of drugs is developed using cells in tissue culture (in vitro, or outside the body). For example, cell physiologists, studying membrane transport, may discover that a particular family of compounds blocks membrane channels for Ca^{++} . Because of their knowledge of physiology, other scientists may predict that a drug of this nature might be useful in the treatment of hypertension (high blood pressure). This drug may then be tried in experimental animals.

If a drug is effective at extremely low concentrations in vitro, there is a chance that it may work in vivo (in the body) at concentrations low enough not to be toxic (poisonous). This must be thoroughly tested utilizing experimental animals, primarily rats and mice. It is typically at this stage that¹ pharmacologists determine the drug's mode of action, its metabolic fate in the test animals, and its rate of absorption and excretion. The tests are carefully controlled, requiring the collection of very specific kinds of data. For example, drugs are evaluated for their short- and long-term effects on particular organs (such as the liver or kidneys) and on more general systems (such as the nervous or reproductive system). Perhaps the most controversial

toxicity testing involves the determination of LD_{50} , the lethal dose for 50% of the test animals.

Results of animal tests must be submitted to the FDA for evaluation before permission is granted to proceed to the next stage – clinical testing of the drug on humans. In addition, approval must be obtained from local agencies and authorities such as a hospital's ethics panel or medical board.

More than 90% of drugs tested in experimental animals are too toxic for further development.

Only in those rare cases when the toxicity is low enough may the drug be moved to human/clinical trials.

Typically, clinical studies involve the three phases: developing a pharmacological profile, testing the efficacy of the drug, and carrying out the actual clinical tests. The entire process often requires six years or more.

In phase I clinical trials, the drug is tested on healthy human volunteers. This is done to test its toxicity in humans and to study how the drug is “handled” by the body: how it is metabolized, how rapidly it is removed from the blood by the liver and kidneys, how it can be most effectively administered, and so on. If no toxic effects are observed, the drug can proceed to the next stage. In phase II clinical trials, the drug is tested on the target human population (for example, those with hypertension). Only in those exceptional cases where the drug seems to be effective but has minimal toxicity does testing move to the next phase. Phase III trials occur in many research centers across the country to maximize the number of test participants. At this point, the test population must include a sufficient number of subjects of both sexes, as well as people of different ethnic groups. In addition, people are tested who have other health problems besides the one that the drug is intended to benefit. Typically, double blind studies² are carried out in this phase. In this methodology, neither the patient nor the physician knows which patients are receiving the drug and which are receiving a placebo, an inactive imitation made to look like the “real thing”.

Once clinical trials have been completed successfully – typically by only 10 drugs out of an original pool of 10,000 compounds – the test data are submitted to the FDA. From discovery to approval, the development of a new drug takes, on average, nearly twelve years and more than 200 million dollars.

Once approval is granted, the drug can be sold in the United States. Nevertheless, it is still monitored through report from physicians. Drugs are removed from the market if serious problems occur. Some side effects show up only when large numbers of users are involved. For example, bexonaprofen, an anti-arthritis drug, was withdrawn from the market because of severe side effect that occurred with an incidence of 1 in 8400 patients. It is estimated that to ensure detection of side effects at this level of incidence, nearly 30,000 people would have had to receive the drug.

The percentage of drugs that makes it all the way through these trials to eventually become approved and marketed is very low. Notice the crucial role of basic research, using experimental animals in this process. Virtually every prescription drug on the market owes its existence to such research.

Notes:

1. It is ... at this stage that – и ... именно на этой стадии.
2. double blind studies – двойной «слепой» метод исследования.

Exercise 1. Find in the text English equivalents for the following words and word combinations:

Могло бы быть пригодным для лечения гипертонии; в концентрациях достаточно низких, чтобы не вызывать отравление; слишком токсичный для дальнейшей разработки; когда токсичность достаточно низкая; и только в тех исключительных случаях; должно быть тщательно изучено; во многих исследовательских центрах по всей стране; достаточное количество людей обоего пола, которые имеют другие заболевания; в конечном итоге, утверждаются и производятся для продажи; краткосрочное и долгосрочное воздействие лекарства; и именно на этой стадии; и как только клинические испытания успешно завершаются.

Exercise 2. Combine the sentences in the lists A and B into logical units:

A

1. Other scientists may predict the usefulness of a certain drug,
2. If a drug is effective at extremely low concentration in vitro,
3. If no toxic effects are observed,
4. The drug is tested on healthy human volunteers,
5. If the drug passes phase III trials,
6. More than 90% of drugs tested on experimental animals,

B

- a) to study how the drug is "handled" by the body;
- b) it goes to the FDA for approval;
- c) because of their knowledge of physiology;
- d) there is a chance that it may work in vivo in concentrations low enough not to be toxic;
- e) the drug can proceed to the next stage;
- f) to basic research using experimental animals;

7. Every prescription drug on the market owes its existence, | g) ~~are~~ too toxic for further development.

Exercise 3. Answer the questions to the text:

1. What are the main means of discovery of new chemicals?
2. What does the process of developing a new drug start with?
3. When may the developed drug be tried in experimental animals?
4. What kinds of data are collected during experiments in animals?
5. What is taken into consideration when moving the drug to human/clinical trials?
6. How long do clinical tests last?
7. How many phases do the clinical trials consist of?
8. What is the aim of testing the drug on human volunteers in phase I?
9. In what case does the drug proceed to phase II?
10. Is the drug tested on the target human population in phase II or phase III clinical trials?
11. Why do phase III trials occur in many research centers across the country?
12. What is the aim of double blind studies?
13. What category of population is selected for participating in phase III trials?
14. After what phase trials is the tested drug approved by the FDA?
15. Why is the approved drug monitored through report from physicians?
16. In what case drugs are removed from the market?
17. What is the percentage of drugs which is eventually approved and marketed?

Exercise 4. Name the main stages of drug development, using the following:

Открытие и разработка новых лекарств – сложный процесс, включающий следующие стадии:

1. физиологическое исследование на клеточном и молекулярном уровне;
2. изучение в пробирке (в чрезвычайно низких концентрациях);
3. изучение на живом организме (на экспериментальных животных);
4. клинические испытания на людях-добровольцах;
 - a) фаза I – определение токсичности лекарства и его «поведения» в организме здорового человека;
 - b) фаза II – определение эффективности и минимальной токсичности лекарства в организме больного человека с определенной болезнью;

- с) фаза III – тестирование лекарства на большой группе населения обоего пола, различных этнических групп, имеющих несколько заболеваний.
 Утверждение (одобрение) лекарства государственной администрацией по контролю продуктов и лекарств в США.
- д) фаза IV – тестирование других, потенциальных возможностей препарата.

Read text 2 and be ready for a comprehension check-up.

TEXT 2

DRUG DEVELOPMENT

The discovery and development of new medicines are complicated processes which pass from chemical development to the end product through many stages, involving different sciences.

To better understand the role of chemical development and its integration with other sciences, let's examine the four separate stages of product development: clinical research and development, chemical research and chemical engineering development, pharmaceutical research and product development, and package research and development.

Clinical development includes details on action of the product: indications, contraindications, warnings, precautions, adverse reactions and dosage and administration.

Chemical development staff combines two groups of specialists: a group of scientists and technical group. The technical group consists of process research chemists and process development engineers.

Connection with other groups such as biological research, chemical research and development, pharmacy research and development, research and production is maintained throughout the course of chemical development.

Initially, a potential drug substance is produced in relatively small quantities for beginning efficacy and animal toxicity studies. Chemical studies in man require very large quantities.

The role of the development chemist and chemical engineer is to develop a chemical process for the large scale preparation of drug substances, to provide sufficient quantities of the drug itself, to support the other groups involved in drug development and finally to provide the means for ultimate manufacture.

The standards required of pharmaceutical agents are such that it is not only necessary to produce initially the purest product possible but also to

guarantee that no new impurities are introduced during the lifetime of the drug.

The quality control laboratories continually check the manufacture throughout the development and production of the active ingredient and final pharmaceutical formulation and packaging.

Today's drug researcher either chemist-biologist or engineer, is well educated in the areas of physical chemistry, including chemical kinetics, colloid chemistry, thermodynamics, etc.

In addition, his biological understanding must be reasonably complete. A knowledge of chemistry, analytical chemistry, statistics and engineering has become a necessity.

While the pharmacists are spending their time developing qualitative and quantitative formulations of the drug that represent the best possible delivery system, the analytical chemist is devoting his efforts to the development of specifications and test methods for all inert excipients, raw materials, bulk drug and finished pharmaceuticals, including statistic sampling procedures.

Last but not least¹, is the area of package development. This area concerns package development in cooperation with other development and control groups.

Note:

1. last but not least - последний по счету, но не по значению.

Exercise 1. Complete the sentences choosing the suitable ending in text 2:

1. The development of the medicines involves 2. Clinical development includes the specification 3. The staff working at chemical development of a drug includes 4. Throughout the course of chemical development the staff maintains 5. The development chemist and chemical engineer provide 6. The requirements to the finished pharmaceuticals are very 7. The quality control laboratory checks

Exercise 2. Answer questions to text 2.

1. How many stages does the drug development pass? 2. What does clinical development include? 3. What specialists are involved in the process of the drug development? 4. In what stage does drug development require large quantity of a drug? 5. What aspects of knowledge should a drug researcher possess? 6. What are the spheres of activity of pharmacists and analytical chemists?

Exercise 3. Compare the information given in Texts 1 and 2. What new facts concerning the development of new medicines have you learned on reading Text 2?

Exercise 4. Fill in the table given below using information from both Text 1 and Text 2. Pay particular attention to the following:

- a) the main stages of drug development from the 1st stage till the last one – finished pharmaceuticals;
- b) specialists involved in each stage of drug development;
- c) tasks solved by the specialists.

The development of new medicines		
Stages	Specialists	Tasks

Read the following text and do the task below.

TEXT 3

ANIMALS IN SCIENTIFIC RESEARCH

Animals have been used in research for more than 2000 years. In the third century B.C., the natural philosopher Eristratus of Alexandria used animals to study bodily function. In all likelihood, Aristotle performed vivisection on animals. The Roman physician Galen used apes and pigs to prove his theory that veins carry blood rather than air. In succeeding centuries, animals were employed to confirm theories about physiology developed through observation. Advances in knowledge from these experiments include demonstration of the circulation of blood by Harvey in 1622, documentation of the effects of anesthesia on the body in 1846, and elucidation of the relationship between bacteria and disease in 1878. In his book *An Introduction to the Study of Experimental Medicine* published in 1865, Bernard described the importance of animal research to advances in knowledge about the human body and justified the continued use of animals for this purpose.

In the 20th century, many medical advances have been achieved through research with animals. Infectious diseases such as pertussis, rubella, measles, and poliomyelitis have been brought under control with vaccines developed in animals. The development of immunization techniques against today's infectious diseases, including human immunodeficiency virus disease, depends entirely on experiments in animals. Antibiotics that control infection are always tested in animals before use in humans. Physiological

disorders such as diabetes and epilepsy are treatable today through knowledge and products gained by animal research. Surgical procedures such as coronary artery bypass grafts¹, cerebrospinal fluid shunts, and retinal reattachments have evolved from experiments with animals. Transplantation procedures for persons with failed liver, heart, lung, and kidney function are products of animal research.

Animals have been essential to the evolution of modern medicine and the conquest of many illnesses. However, many medical challenges remain to be solved. Cancer, heart disease, cerebrovascular disease, dementia, depression, arthritis, and a variety of inherited disorders² are yet to be understood and controlled. Until they are, human pain and suffering will endure, and society will continue to expend its emotional and fiscal resources in efforts to alleviate or at least reduce them.

Animal research has not only benefited humans. Procedures and products developed through this process have also helped animals. Vaccines against rabies, distemper, and parvovirus in dogs are a spin-off³ of animal research, as are immunization techniques against cholera in hogs, encephalitis in horses, and brucellosis in cattle. Drugs to combat heartworm⁴, intestinal parasites, and mastitis were developed in animals used for experimental purposes. Surgical procedures developed in animals help animals as well as humans.

Research with animals has yielded immeasurable benefits to both humans and animals. However, this research raises fundamental philosophical issues concerning the rights of humans to use animals to benefit humans and other animals. If these rights are granted, additional questions arise concerning the way that research should be performed, the nature of an ethical code for animal research, and who should compose and approve the code.

Notes:

1. coronary artery bypass grafts – шунтирование коронарной артерии;
2. inherited disorders – наследственные заболевания;
3. spin-off – сопутствующий результат;
4. heartworm – нематода (круглый червь), который инфицирует сердце и артерии собак.

1. Animals have been used in research from ancient times. Give as many examples as you can to show the contribution of animal research to the evolution of medicine.
2. Make list of medical advances, which have been achieved through research with animals in the 20th century.
3. Animal research has benefited not only humans but animals as well. What procedures and products have been developed to help animals?

4. The use of animals in research is fundamentally an ethical question. Is it more ethical to ban all research with animals?

TEXT 4

ANIMAL TESTING AND HUMAN HEALTH

Scan the text "Animal testing and human health" to find particular information about:

1. Screening tests which are very difficult and costly procedures.
2. The conflict between animal rights activists and scientists conducting research.
3. Alternatives to the use of animals in scientific research.
4. The American Medical association which stands in defense of the use of animals for scientific research.

On reading the text sum up the information given in it using the previous task as an outline.

Chemists have screened over 22.000 of more than 50.000 common chemicals as potential carcinogens. Screening tests are very difficult and costly procedures – some studies of a single compound may cost millions of dollars and require several years of animal tests. The standard testing procedure is to feed large amounts of laboratory animals – usually mice or rats – on a regular basis and examine them for tumors after several months or years. The animals must be fed and housed in clean facilities and carefully monitored during the test period, or the data are meaningless.

Serious scientists are very careful with laboratory animals because they recognize their crucial contribution to our knowledge of the disease process. However, some animal rights activists, believing laboratory animals are mistreated, break into laboratories, destroy equipment and research records, and set infected animals loose¹ – even those infected with incurable diseases. These activists have increased the costs of performing medical research by causing researchers to divert research funds to security operations; this slows progress toward curing diseases and ultimately increases medical care costs and problems of human suffering (and animal suffering, since many medical discoveries are used to treat animals as well as humans). Some groups want to ban animal testing altogether. If there were an effective alternative, scientists might agree but this is often not the case.

Two suggested alternative techniques include running computer simulations and testing tissues or cultures rather than live animals. Unfortunately, these techniques are not always effective. Although most

scientists would undoubtedly prefer running computer simulations considering the funds and time needed to obtain reliable animal data, it is virtually impossible to create the software to run such simulations without first gaining data from animal testing. (In fact, the few existing programs were written based on data from animal testing). Perhaps someday a good computer simulation will exist, but this is not a viable option at present.

A few screening tests do exist that use tissues or cultures instead of animals – for example, the HeLa cell research. But most scientists are reluctant to conclude that a compound is or is not carcinogenic in humans based on such tests; if they are wrong, the cost may be measured in human lives. Even “helpful” chemicals – drugs to treat cancer or AIDS, for example – may have deadly side effects that do not show up in a laboratory culture. At least for now, these tests require animals.

The American Medical Association believes that research involving animals is absolutely essential to maintaining and improving the health of people in America and worldwide. Animal research is required to develop solutions to human tragedies such as human immunodeficiency virus disease, cancer, heart disease, dementia, stroke, and congenital and developmental abnormalities. The American Medical Association recognizes the moral obligation of investigators to use alternatives to animals whenever possible, and to conduct their research with animals as humanely as possible. However, it is convinced that depriving humans² of medical advances by preventing research with animals is philosophically and morally a fundamentally indefensible position. Consequently, the American Medical Association is committed to³ the preservation of animal research and to the conduct of this research under the most humane conditions possible.

Notes:

1. set ... loose – освобождают;
2. depriving humans – лишая человечество;
3. is committed to – принимает на себя обязательство.

Read the article “Is it wrong to experiment on animals” from the journal “General studies”. Analyze two opposing views, paying particular attention to:

- a) initial assumptions;
- b) the evidence cited;
- c) the logic used;
- d) the conclusion drawn.

IS IT WRONG TO EXPERIMENT ON ANIMALS?

NO	YES
<p>1) Animal experimentation plays an important role in finding cures for diseases and in the safety testing of new products.</p> <ul style="list-style-type: none"> • There are about 2.6 million experiments on animals in Britain each year. Although this may sound a lot, it is less than half the number being carried out 30 years ago. <p>2) How else are we going to find cures for diseases such as cancer, AIDS and Alzheimer's Disease? Would you condemn an animal experiment if it might save your dying best friend?</p> <ul style="list-style-type: none"> • Some of the research using animals is veterinary research, so animals benefit as well as humans. <p>3) Animal experimentation has the support of the vast majority of doctors and those involved in medical research as the only way to detect problems with drugs before they are used on humans. Some problems are missed, but things would be infinitely worse if animal tests were stopped.</p> <ul style="list-style-type: none"> • Quite a lot of medical research is carried out on humans, and animals are used only for things that cannot be performed on humans. <p>4) Most people believe that humans are more important</p>	<p>1) Of the 2.6 million experiments on animals in Britain each year, about two-thirds are carried out without using an anaesthetic, which must cause pain, distress or lasting suffering to the animals used.</p> <ul style="list-style-type: none"> • Such experimentation is the exploitation of the weak by the strong for the benefit of the strong, and is carried out knowing that the animals do not benefit in any way from the process. <p>2) If animals benefit because some experimentation is veterinary research, does that mean that experiments on humans are justified because everybody will therefore benefit? If not, why not?</p> <ul style="list-style-type: none"> • Animal-tested drugs have not all been safe when used on humans, e.g. thalidomide. <p>3) Not all animal experimentation is about medical research. Commercial interests, British exports and maintaining or increasing the market share of big companies plays an important role.</p> <ul style="list-style-type: none"> • Finding cures for diseases and safety testing of products is important, but does the end justify the means? <p>4) Are we sure that humans are more important than animals? Even</p>

than animals, that there is a clear distinction between our species and others. Most also accept that there is therefore a clear duty to reduce human suffering without being deliberately cruel to animals used in experiments.

- Many animals are mistreated and others are hunted or eaten for pleasure. By comparison, the number used in research is not huge.

if it is accepted that humans are more important than animals, it does not follow that we should deliberately cause them pain and suffering.

- If an animal experiment might save your dying best friend, would you condemn the experiment? The clear answer of most people would be that if there really had to be a choice between their best friend and an animal they would choose their best friend. However, if they were given a choice between their best friend and a complete stranger they would again, no doubt, choose their best friend. Does that mean that experiments on human beings who are strangers are acceptable? If not, why not?

Answer the following questions:

1. Which view makes the more compelling case and why?
2. Which position would you choose?
3. What would be your answer to the question "Is it wrong to experiment on animals"?

PART IV. Speech Exercises

Exercise 1. Complete the sentences using the information studied on the topic "Discovery and development of new medicines"

1. The process of developing a new family of drugs usually starts with ...
2. Initially, a potential drug substance is produced in rather small quantities because ...
3. Large quantities of a drug substance are required for ...
4. Before the drug is approved by FDA, it must be thoroughly tested on human volunteers to ...

5. To meet the standards required of pharmaceutical agent, it is not only necessary to produce the purest product but also to
6. Today's drug researcher is well educated in different areas of physical chemistry, including
7. The task of the quality control laboratory is to
8. Using experimental animals is absolutely necessary in basic research because

Exercise 2. Answer the questions with two or more sentences:

1. Why does the development of new medicines take much time?
2. Why is a potential drug substance produced in relatively small quantities?
3. Which stage of product development requires very large quantities of a drug substance?
4. Does the quality control laboratory check the development of a drug through all stages or only in the final stage? Why?
5. Do experiments on animals play an important role in finding cures for different diseases?
6. What might be used as alternative techniques instead of using live animals in drug testing?

Exercise 3. Prove that:

- a) the standard testing procedures are a long complicated process;
- b) scientists conducting their research can't do it without experimental animals;
- c) knowledge of chemistry, analytical chemistry, statistics and engineering has become a necessity in the process of developing new family of drugs;
- d) every prescription drug on the market owes its existence to basic research using experimental animals;
- e) the percentage of drugs which have gone through all stages of clinical trials and become approved and marketed is very low.

Exercise 4. Explain the following:

1. In some countries the safety of drugs is a concern of the government.
2. The approved drug meets certain quality standards.
3. When FDA approves a drug, it says that the drug is "safe and effective when used as directed".

Exercise 5. Ask your friend (colleague) in English:

- a) Разрабатываются ли новые лекарства в научной лаборатории, где он работает; входит ли он в состав группы биологического исследования или фармацевтического исследования; поддерживается ли связь между разными группами исследования; производится ли новое лекарство в нужных количествах; достаточно ли это количество для проверки на токсичность на животных; проверяет ли лаборатория контроля качества производство лекарства на всех стадиях его разработки.
- b) Каково направление исследования научной лаборатории; как долго ученые и инженеры работают в данном направлении; перспективность и необходимость разработки групп данного вещества; на какой стадии находится данное исследование; на каких животных тестируется лекарственное вещество; когда будет проходить клинические испытания данного препарата; в каком случае данный препарат будет одобрен; сколько понадобится лет, чтобы препарат, в случае успешного тестирования, появился в продаже.

Exercise 6. Express your opinion and develop the idea of the given statements. Use the following phrases:

I have my own point of view concerning the problem

Frankly speaking, I've no idea about

Perhaps, I can extend the idea

On the one hand ... , on the other hand

My point of view differs (from)

(As far) as I understand it

As it concerns

1. Suppose a chemical agent was developed that could extend the life span to an average of 200 years but about one in 1000 people died from the treatment. Would you take this drug? How would you evaluate the relative risks and benefits?
2. Drug research requires testing to determine the safety and effectiveness of various drugs. Most of this research uses insects, mice or rats. The campaigns against animal research tend to concentrate on dogs, cats and rabbits. Why do you think this is so?
3. Everyone knows drugs have side effects. However, some drugs seem unusually dangerous for some people. Should such dangerous drugs be allowed on the market? (Remember that they effectively treat some diseases). What kind of warning label should each drug carry? Would you take one of these drugs if the alternative was possible death?

Exercise 7. Work in groups of 4 or 5. You are talking about experiments on animals. Give your pros and cons on the problem. Try to use Real Condition and Unreal Condition sentences.

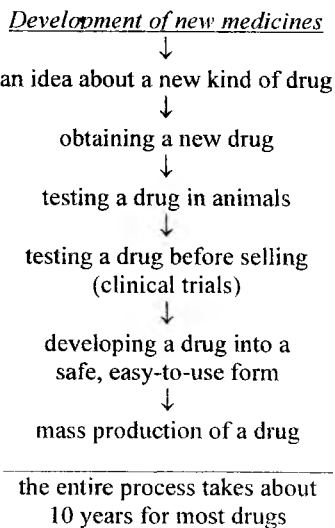
Discussion group:

- a chemist-biologist involved in the process of developing new medicines;
- a head of the research laboratory of a leading pharmaceutical company;
- a member of FDA responsible for the approval of new drugs;
- an undergraduate student;
- an animal rights activist;
- a representative of a leading honorary research society.

Statements:

- finding a cure for cancer or AIDS might justify the death of an animal;
- things in medical research would be worse if animal tests were stopped;
- the suffering of an animal should be weighed against the benefit gained from such suffering;
- animal testing is necessary to study the impact of contaminants on the environment and human health;

Exercise 8. Get ready to speak on the topic "Discovery and development of new medicines", using the following scheme as an outline:



SECTION 4
Topic for reading and discussion
"CONSTITUENTS OF DRUGS"

Grammar: Participle I. Gerund. Complex Forms. Participle and Gerundial Constructions.

PART I. Structure Recognition

Independent Participle Construction.

Table I

Participle I and Gerund. Complex Forms.

Participle I	Passive	being obtained
Indefinite Gerund		
Perfect Participle	Active	having obtained
Perfect Gerund		
Perfect Participle	Passive	having been obtained
Perfect Gerund		

Exercise 1. Study the translation patterns of Participle I (Complex forms) and practise in translating some examples given below:

Being asked to take part in the conference the students agreed immediately.

He went having looked through all the articles.

Having been advised by the doctor to change the climate she moved to another place.

Когда студентов попросили принять участие в конференции, они согласились немедленно.

Он ушел домой, просмотрев (после того, как просмотрел) все статьи.

Так как врач посоветовал ей поменять климат, она поменяла место жительства.

1. Being administered during a two-month period, the drug exerted a positive action on the patient's condition. 2. Being manufactured at the factory half a year ago, the drug was sent to a special laboratory for the determination of its quality. 3. Having changed the volume of vessels, we were able to obtain

larger amounts of the final product. 4. Having analyzed the animal's response to a new antibiotic, the researcher established the sensitivity of the microorganisms. 5. Having been treated with sodium hydroxide solution, the product acquired a characteristic odour and unpleasant taste.

Exercise 2. Study the translation patterns of the Gerund (Complex forms) and practise in translating some examples given below:

He entered the laboratory without being noticed.

By having developed a new method of identifying compounds ahead of time he helped us greatly.

We knew of the experiments having been carried out.

Он вошел в лабораторию незамеченным.

Тем, что он досрочно разработал новый метод идентификации соединений, он очень помог нам.

Мы знали о том, что эти опыты уже были проведены.

Note that the Gerund as well as the Participle may form with dependent words constructions. Gerundial constructions are especially difficult for translation, as there is no exact form for translation.

Compare

Gerund

I object to his delivering lectures to the third-year students.

Я возражаю против того, чтобы он читал лекции третькурсникам.

Participle

Delivering lectures to the third-year students he always used modern findings.

Читая лекции третькурсникам, он всегда использовал современные данные.

1. Our professor likes being asked questions on organic compounds. 2. I don't remember his having identified leaves or plants properly. 3. There were many difficulties in my brother's entering the institute. 4. Our laboratory is interested in the carbon compounds being introduced into industrial manufacture. 5. Cardiac drugs, being sold in insufficient amounts at chemists' are well known. 6. I know of his being sent abroad. 7. The head of the chair objected to Dr. Close's delivering lectures on pharmacognosy.

Exercise 3. Note that *Gerund* is an equivalent of the subordinate clause.

Compare:

A They insist that this apparatus should be applied during the work.

B They insist on this apparatus being applied during the work.

In science B is usually used. Rewrite the sentences using Gerund as in B.

1. I know that he has sent some findings for your report. 2. I remember that I met your coursemate during my practical work in the North. 3. She understood that you disliked the idea of staying in town on the weekend. 4. We insisted that he should come up with us. 5. We insisted that the work should be done properly. 6. The doctor insisted that the patient should be sent to hospital.

Exercise 4. Read the sentences and pick out verbs or word combinations after which the *Gerund* is used.

1. He was interested in collecting rare minerals. 2. I remember having met you before. 3. We knew of opium poppy being used as a pain-killer. 4. Everyone new began talking to my friend. 5. Some plants succeeded in rapidly converting war manufacture to people's needs. 6. The treatment consists in his regular taking herb infusions. 7. The mankind is interested in atomic energy being used for peaceful needs. 8. They spoke of organizing a new laboratory. 9. I remember having been helped at that period. 10. I don't mind your taking this book.

Exercise 5. Translate the following word combinations using corresponding forms of *Gerund*.

- a) Для приготовления химических соединений, для лечения больных, для разработки новых методов, для выращивания лекарственных растений, для использования особых лекарственных форм;
- b) до отъезда, до изготовления, до окончания, до воздействия на температуру, до стимулирования роста, до облегчения боли, до указания дозы;
- c) после того как было изготовлено, после того как он уехал, после того как воздействовали на температуру, после того как стимулировали рост, после того как облегчили боль, после того как было назначено некоторое количество.

Exercise 6. Choose the proper form of the Gerund or Participle.

1. Substances (occurring, having occurred) in different plant tissues may be chemically similar. 2. Some plants require different methods of (being dried, drying). 3. Carbohydrates contain carbon, hydrogen and oxygen, the last two elements (found, being found) in the proportion in which they exist in water. 4. The major part of alcohol is removed by (having washed, washing) the protein with anhydrous ether. 5. New methods of (testing, being tested) have led to the discovery of new uses for older drugs. 6. (Being grouped, having grouped) together pharmaceutical drugs from plants are known to us as galenicals. 7. The discovery of cyclamate was due to accidental contamination of a cigarette (being smoked, having smoked) by the researcher.

Exercise 7. Complete the sentences with the gerundial constructions as in the model:

Model: He objected to He objected to taking part in the conference.

1. The treatment consisted in 2. I don't mind 3. He was interested in 4. A group of students spoke of 5. I remember 6. We continued 7. I like 8. I don't like 9. I have 9. I hate 10. She prefers 11. We intended

PART II. Vocabulary Learning

Exercise 1. Read the words of the Latin and Greek origin and try to translate them using your knowledge of the Russian, Latin and English languages:

Glycoside	[ˌɡlɪkəˈzɪːd]	phenol	[ˈfɪːnɔl]
tannin	[ˈtænɪn]	tobacco	[təˈbækəʊ]
biosynthetic	[ˌbaɪəˈsɪnθetɪk]	organism	[ˈɔːɡənɪzəm]
extraction	[ɪksˈtrækʃən]	phenolic	[fɪˈnɒlɪk]
proportion	[prəˈpɔːʃən]	hydrolysis	[haɪˈdrɒlɪsɪs]
cardiac glycosides	[ˈkɑːdiæk]	molecular	[məʊˈlekjələ]
structure	[ˈstrʌktʃə]	fruit	[fruːt]
anthocyanine	[ˌænθəˈsaɪənɪn]	nicotine	[ˈnɪkətiːn]
reserpine	[ˈriːzəpiːn]	strychnine	[ˈstrɪkniːn]
heterocyclic	[ˌhetərəʊˈsɪklɪk]	demonstrate	[ˈdemənstreɪt]
demonstration	[ˌdemənˈtreɪʃn]	crystalline	[ˈkrɪstəlɪn]
diagnosis	[ˌdaɪəˈɡnəʊsɪs]	mechanism	[ˈmekənɪzəm]
toxic	[ˈtɒksɪk]	minimal	[ˈmɪnɪməl]

saponin	[sə'pɒnɪn]	internally	[ɪn'tə:nli]
fatal	[f'eɪtəl]	journal	[dʒə:nəl]
externally	[eks'tə:nli]	barbiturate	[bɑ:'bɪtjʊreɪt]
clinical	[k'lɪnɪkəl]	crystal	[kristəl]
equivalent	[ɪk'wɪvələnt]	nitrogenous	[naɪ'trɒdʒɪnəs]

Exercise 2. Test yourself whether you remember the terms of the Greek and Latin origin being used in the previous lessons.

Carbohydrate, petroleum, amino-acids, protein, hydrogen, oil, volatile oil, fat, alcohol, ester, methane, graphite, antibiotic, guanidine, capsule, hypertension, diuretics, hormone, opium, chloroform, poison, ointment, sedative, nitric acid, sulphuric acid, sodium, potassium, oxygen, hydrochloric acid, alkali, herb, elliptical, photosynthesis, ventilate, cylinder, accurate, natural, reagent, mechanism, acrylic fiber, isolate, characterize, laboratory, physiological, microbe, microbiology, component, civilization, extract, industrial, herb, associate, characteristic.

Exercise 3. Read and translate the pairs of words of the same root. Identify their parts of speech.

Internal - internally, external - externally, science - scientifically, research - researcher, botany - botanical, synthesis - synthetically, characterize - characteristic, large - largely, number - innumerable, general - generally, nitrogen - nitrogenous, different - differently, glycoside - glycosidic, molecule - molecular, important - importance, discover - discovery.

Exercise 4. Group the words according to their formal structure:

Phenolic, solubility, physiological, organic, complexity, proportion, colloidal, lotion, heterocyclic, extraction, application, general, public, publicity, activity, isolation, therapeutic, toxic, intensity, original, enthusiastic, periodic, clinical.

Exercise 5. Read and try to remember the words of your Active Vocabulary.

a) words and word combinations indicating substances or their constituents:

wax [wæks]. n	- воск;
butyric acid [bju:'tɪrɪk 'æsɪd]	- масляная кислота;
linoleic acid [lɪnəu'li:k 'æsɪd]	- линолевая кислота;
stearic acid [stɪəri:k 'æsɪd]	- стеариновая кислота;
cellulose ['seljʊləʊs]. n	- целлюлоза клетчатка;
mucilage ['mju:sɪlɪdʒ]. n	- слизь, клейкое вещество;

codliver oil [	]	- рыбий жир;
arachidic acid [	]	- арахидиновая кислота;
tannin [	], n	- танин;
insecticide [	], n	- средство от насекомых, инсектицид.

b) names of medicinal plants:

convallaria [	], n	- ландыш (<i>англ. lily of the valley</i>);
adonis [	], n	- горичвет, адонис;
chamomile [	], n	- ромашка;
digitalis [	], n	- наперстянка;
rauwolfia [	], n	- раувольфия;
strophanthus [	], n	- строфант;
pansy [	], n	- фиалка трехцветная (<i>лат. Viola tricolor</i>);
violet [	], n	- фиалка (<i>лат. Viola</i>);
thorn-apple [	], n	- дурман (<i>лат. Datura stramonium</i>);
belladonna [	], n	- белладонна, красавка; (<i>англ. deadly nightshade</i>);
strichnos nux vomica [	]	- чилибуха (рвотный орех);

c) words relating to pharmacy:

species [	], n	- вид;
precipitate [	], n	- осадок;
		v - осаждаться;
mauve [	], a	- розово-лиловый;
stability [	], n	- устойчивость.

d) general scientific words:

utilize [	], v	- использовать;
distinguish [	], v	- различить, проводить различие;
distinguishing [	], a	- характерный, отличительный;
yield [	], v	- производить давать,
	n	- выход, результат;
intensify [	], v	- усиливать(ся);
convert [	], v	- превращать, переделывать;
resemble [	], v	- походить, иметь сходство;
remain [	], v	- оставаться;
origin [	], n	- оригинал, происхождение;
subject [	], v	- подвергать (воздействию, влиянию и т.п.);

certain ['sə:tn], a	- определенный;
comprehend [,kɒmpri'hend], v	- понимать, охватывать; включать;
accomplish [ə'kɒmplɪʃ], v	- совершать, выполнять;
exclude [eks'klu:d], v	- исключать;
recently ['ri:sntli], adv.	- недавно;
abundant [ə'bʌndənt], a	- обильный.

Exercise 6. Translate into English the words of the same root:

Solution – раствор, растворимый, растворимость; alcohol – спирт, спиртовой; nitrogen – азот, азотистый, азотный; internal – внутренний, вовнутрь; science – наука, научный; external – наружный, снаружи; structure – структура, структурный; fat – жир, жирный; character – характер, характеризовать, характерно; synthesis – синтез, синтетический; psychiatry – психиатрия, психический; phenol – фенол, фенольный.

Exercise 7. Read and translate the following word combinations:

Complex nitrogenous organic substances, nitric acid, chemical treatment of active constituents, plant and animal drugs, therapeutic effect, different plant tissues, to require different methods of treatment of substances, examples of fatty acids, potassium salts, vegetable or animal origin, to be associated with water, colour reaction, living tissues, sugars of different degrees of complexity, plants containing cardiac glycosides, to be distributed in large groups of plants, to acquire knowledge, to yield good results, to give good yields of seeds and fruits.

Exercise 8. Answer the alternative questions, using the words of the active vocabulary.

1. Are the leaves of lily of the valley and chamomile similar or different? 2. Have alkaloids been investigated recently or long before? 3. Is the word "physics" of Latin or Greek origin? 4. Are alkaloids distributed in all plant families or only in certain ones? 5. Is cod-liver oil of plant or of animal origin? 6. Is tobacco cultivated in our country or only in the tropics? 7. Are opium alkaloids used internally or externally? 8. Is tobacco sold at the chemist's or at shops? 9. Do you use codliver oil or olive oil as food? 10. Do butyric, linoleic, arachidic, stearic acids occur in nature or are they synthetic? 11. Is olive oil fixed oil or a volatile one?

Exercise 9. Translate the derived adjectives. Note that suffix "less" means "without, not having", prefixes un-, im-, in- have a negative meaning too.

A. less

colour - цвет, colourless -; odour - запах; odourless -; water - вода; waterless -; home - дом; homeless -; faith - вера, faithless-;

B. un-, im-, in-

covered - закрытый, uncovered -, important - важный, unimportant-; educated - образованный, uneducated-; read - прочитанный, unread-; seen - видимый, unseen-; number - число, innumerable-; different - различный, indifferent-; pure - чистый, impure-; mature - зрелый, immature-.

Exercise 10. Read the exercise, find the words of the active vocabulary, and translate them. Retell the contents using these words.

Chamomile is a branched herb native in Europe and Western Asia, and also found in Egypt. Chamomile flowers are described as hemispherical about 6 mm in diameter. The flowers contain volatile oils of characteristic odour which find a wide application in medicine.

One of the most important of them is chamazulene. It has been observed that the yield of chamazulene is different in plants growing under different conditions. The experiment on the effect of coloured lights on chamomile flower was carried out at the institute of medicinal and aromatic plants.

The plant had grown under irradiation for a period of 10 hours of white light followed by 6 hours of blue, green and red lights. The results of the experiment showed that daily irradiation of 10 hours of high intensity of white light followed by 6 hours of blue or red light had produced similar amounts of chamazulene in the flowers.

Green light treatment gave a better effect on the quality of the produced flowers. White light treatment gave the highest amount of volatile oils during the whole period of growth.

Exercise 11. Fill in each blank with an appropriate word of the Active Vocabulary.

1. Digitalis is well known in England under the name of ... 2. Over ground parts of the wild plant consisting of white small flowers with a pleasant odour, are gathered in spring at the time of flowering. 3. The word ... is often applied to aqueous suspensions or solutions of gelatinized starches. 4. ... is a plant with large leaves which are dried, treated in various ways and used for smoking. 5. ... is a term indicating a group of plants having important characteristics and passing on their special characteristics.

Exercise 12. Match the words of column A with the words of column B and translate them.

A	remain	B	quantity of leaves
	comprehend		colours
	innumerable		species
	distinguish		inert
	exclude		the importance of
			stable
			antibiotic
			drugs of plant origin
			new theories

Exercise 13. Choose the proper word for each sentence.

1. The flowers are gathered in May and June and subjected to (evaporation, boiling, drying). 2. A number of substances are now used to (distinguish, accomplish, treat) food during processing. 3. The discovery of cyclamate was due to accidental (intensification, yield, contamination) of food. 4. Temperature, the presence of other substances, concentration and solubility in test media – all affect the (certain, abundant, obtained) results. 5. Different proteins (remain, resemble, differ) so much in their solubility that this property has been commonly employed as a basis for their classification. 6. It is said that this alkaloid taken in large quantities is (distinguishing, responsible, stable) for death. 7. The temperature and the presence of other substances (subject, affect, utilize) the results obtained.

Exercise 14. Replace the following by the words from the active vocabulary.

1) Deep purple colour; 2) understand fully and completely; 3) a group of plants or animals having important common characteristics; 4) a solid matter from a solution; 5) oil from the livers of some fish used as a medicine to strengthen children and weak persons; 6) an organic substance containing nitrogen, carbon, oxygen, hydrogen and sulphur and occurring in such things as milk, eggs, meat, etc.; 7) a poisonous substance (liquid or powder) for killing insects; 8) more than enough; 9) not long ago.

PART III. Reading Comprehension

Read text 1. Find and translate sentences with Participle Constructions. Pick out the words of the Active Vocabulary.

TEXT I

ACTIVE CONSTITUENTS OF DRUGS

The living organism may be considered a biosynthetic laboratory not only for chemical compounds (carbohydrates, proteins, fats) that are utilized as food by man and animals but also for a great number of compounds (glycosides, alkaloids, volatile oils) that exert a physiological effect on the organism.

These chemical compounds give plant and animal drugs their therapeutic properties. The usual term for them is constituents. As plant or animal constituents are responsible for the therapeutic effect, we call them active constituents.

Plant constituents of medicinal importance form a large group of compounds. They show great variation in solubility and stability. Substances occurring in different plant tissues may be chemically similar but they require different methods of treatment, drying, storage and extraction.

The plant constituents of special interest to the pharmacist may be classified as follows: fatty acids, fixed oils, fats and waxes, phenols, tannins, proteins, alkaloids, carbohydrates, glycosides, mucilages, volatile oils, colouring matters.

The common fatty acids are found in fixed oils, fats and waxes. The example of fatty acids are linoleic, arachidic, stearic, butyric. When acted upon by alkalis they form soaps, the sodium or potassium salts. Fixed oils, fats and waxes may be liquid or solid at ordinary temperatures and of vegetable or animal origin. For example, olive oil is of vegetable origin and codliver oil is of animal one. Vegetable oils and fats occur mainly in seeds or fruits.

Phenols, being widely distributed in plants, are usually present in combination with sugars and form phenolic substances. They show the usual phenolic properties such as solubility in alkali and colour reactions with ferric chloride.

Proteins are complex nitrogenous organic substances forming an essential part of all living tissues. In living tissues proteins are associated with water and are present in the colloidal state. When boiled with dilute acids or when subjected to the action of enzymes under certain conditions, the protein molecule is degraded.

Alkaloids are also nitrogenous compounds of vegetable origin possessing some marked physiological actions. Most alkaloids contain the elements carbon, hydrogen, nitrogen and oxygen in their molecules. Alkaloids occurring in many families of flowering plants are usually present in plants in the form of salts of organic acids.

Carbohydrates are compounds containing the elements carbon, hydrogen and oxygen, the last two elements being usually found in the proportion* in which they exist in water. The group includes sugars of different degrees of complexity.

Sugars are readily soluble in water and have a sweet taste. More complex sugars as cellulose are insoluble in water.

Glycosides are substances which on hydrolysis yield one or more sugars among the products of the reaction.

Some of the more important classes of glycosides are cardiac glycosides, saponins, phenol glycosides, etc. It has been shown that the sugar part of the cardiac glycosides consists of four sugar molecules. Plants containing cardiac glycosides are convallaria, adonis, strophantus, digitalis or fox glove, etc.

Substances which give the characteristic colours to such plant organs as flowers, fruits and leaves may be classified as pigments. Chlorophyll is the green pigment to which the colour of leaves is largely due. It is extracted from dried material by alcohol or chloroform and alcoholic extracts of leaves are therefore green.

The innumerable shades of violet, mauve, blue and red which give colours to the flowers, fruits, stems, and often leaves of plants are generally due to glycosides, or anthocyanins.

* the last two elements being usually found in the proportion – причем два последних элемента встречаются в соотношении ...

Exercise 1. Answer the questions to text 1.

1. Why can the living organism be considered a biosynthetic laboratory?
2. What chemical compounds that exert a physiological effect occur in the living organism?
3. What is the therapeutic effect of medicinal plants due to?
4. Are the substances occurring in different plants similar or different in their chemical properties?
5. What groups of plant constituents are of special interest to the pharmacist?
6. What do you know about fats, waxes and fixed oils? And what about phenols?
7. To what group of constituents are sugars included?
8. What plants containing cardiac glycosides can you name?
9. How are pigments defined?
10. What pigment is the most widely distributed in nature?
11. What is the colour of flowers, trees, fruits and leaves due to?

Exercise 2. Add the proper ending of the sentences.

1. Most alkaloids contain ...

- a) the chemical compounds; b) the plant tissues;
c) the elements carbon, hydrogen, nitrogen and oxygen.

2. On hydrolysis glycosides yield
 - a) among the products of the reaction;
 - b) one or more sugars;
 - c) some sugars.
3. Many plant compounds are responsible
 - a) for different methods of extraction;
 - b) for the therapeutic effect;
 - c) for active constituents.
4. Fixed oils, fats and waxes may be liquid or solid
 - a) at ordinary temperature;
 - b) at low temperature;
 - c) at room temperature.
5. Vegetable fats occur
 - a) on the seeds;
 - b) under the fruit;
 - c) in fruits and seeds.
6. Alkaloids and glycosides exert a therapeutic effect on the organism
 - a) mainly;
 - b) for the active constituents;
 - c) due to their chemical composition.

Exercise 3. Expand the sentences adding participle constructions instead of blanks:

1. Phenols ... are usually present in combination with sugars. 2. Proteins are complex nitrogenous organic substances 3. Alkaloids ... possess some marked physiological action. 4. Carbohydrates ... are widely distributed in nature. 5. Glycosides are substances 6. Plants ... are convallaria, adonis, strophanthus, fox-glove, etc. 7. Substances ... may be chemically similar. 8. Plant constituents ... show great variation in solubility and stability.

Exercise 4. Make up questions to the underlined words as in the model:

Model: Man utilizes plants as food. - What does man utilize as food?

1. A great number of plant compounds exerts a physiological effect on the organism. 2. Fatty acids under the action of alkalis form soaps. 3. Fixed oils, fats and waxes solidify at low temperatures. 4. Phenols show the usual phenolic properties with ferric chloride. 5. Alcohol dissolves some plant proteins. 6. Glycosides yield sugars on hydrolysis.

Exercise 5. Put in the missing words from the list:

considered, sugar, yield, included, require, composed, utilized

1. Phenols are distributed in plants, usually in combination with ... 2. On hydrolysis glycosides ... one or more sugars among the products of the reaction. 3. The sugar part of the molecular structure of cardiac glycosides is ... of four sugar molecules. 4. Alkaloids of foxgloves are ... into the group of cardiac drugs. 5. Some substance ... different methods of treatment, drying, storage and extraction. 6. Plant constituents are ... in medicine in the treatment of various diseases. 7. Alkaloids and glycosides were ... as medicines long before development of pharmacy as a science.

Exercise 6. Complete the alternative questions, adding, an or-phrase.

1. Is butyric oil of animal origin or ...? 2. Do plant constituents require similar methods of treatment or ...? 3. Are fatty acids found in volatile oils or ...? 4. Do fatty acids form soaps when acted upon by alcohols or ...? 5. Is codliver oil of vegetable origin or ...? 6. Do vegetable oils and fats occur mainly in the seeds or ...? 7. Do alkaloids occur in the leaves of trees or ...?

Exercise 7. Define the following notions as in the model:

Model: Fixed oils – Fixed oils are esters of unsaturated acids.

1. Proteins. 2. Alkaloids. 3. Carbohydrates. 4. Sugars. 5. Active constituents of drugs. 6. Glycosides. 7. Chlorophyll.

Exercise 8. Translate into English.

1. Считается, что азотосодержащие соединения растительного происхождения распространены не широко, и встречаются в некоторых семействах и видах растений. 2. Было установлено, что только в 10-15% растений содержится свыше двух тысяч известных алкалоидов. 3. Было определено, что алкалоиды выпадают в осадок через полчаса после начала нагревания смеси. 4. Низкая температура обуславливает (ответственна) за устойчивость многих органических соединений. 5. Многие растения имеют ткани, одинаковые в химическом отношении. 6. Составные части растений, такие как фенолы, танины, летучие и нелетучие масла широко используются в синтезе многих химических веществ. 7. Соли натрия и калия применяются в производстве мыла. 8. Известно, что рыбий жир оказывает действие на рост костей или костных тканей. 9. Цвет листьев, стеблей, плодов и других частей растений связан с присутствием хлорофилла в растении. 10. За время практических занятий студенты второго курса определили цвет семян по цветной шкале (colour scale).

Exercise 9. Choose the corresponding form of the verbs given in brackets for each pair of sentences.

1. Seeds derived from species of Strophanthus ... long ... by the population of East and West Africa for the preparation of poison, though there is a great number of synthetic cardiac drugs, seeds of Strophanthus ... widely ... by pharmaceutical plants (are used, have been used).
2. In 1885 glycoside strophanthin ... by Fraser and recommended for use in medicine. By the twentieth century strophanthus ... from about thirty species found in Africa (was isolated, had been isolated).
3. In the non-cultivated state digitalis plants ... usually ... in the places protected from light. According to the discovery of the English scientists some cardiac glycosides from the dried leaves of the foxglove ... themselves ... in the complex glycosides present in the fresh plant (are found, have been found).
4. The drug ... microscopically at the practical classes. The drug ... microscopically at the practical classes during the week (is examined, has been examined).
5. It ... that the surface of the fruit yields glucose on hydrolysis. He ... the surface of the fruit yields glucose on hydrolysis (has considered, is considered).
6. The powdered drug ... with water or aqueous alcohol containing dilute acid. It was known that pigment and oily impurities ... by other organic solvent (was extracted, had been extracted).

Read text 2 and be ready for a comprehension check-up.

TEXT 2

THE PLANT ALKALOIDS

Alkaloids, which are active constituents of plants have been utilized from ancient times as medicines, poisons, and magical potions¹. Only recently man has acquired precise knowledge about the chemical structures of many of these interesting compounds. The term "alkaloid" or "alkali-like" was first introduced in 1819 by the pharmacist W. Meissner. It is usually applied to basic, nitrogen-containing compounds of plant origin. Such compounds occur only in certain genera and families² and they are seldom universally distributed in large groups of plants.

Chemical, pharmacological and botanical properties must all be considered when classifying a compound as an alkaloid. Examples of well-known alkaloids are morphine (opium poppy), nicotine (tobacco), reserpine

(rauwolfia), strychnine (strychnos nux vomica). Alkaloids usually have a rather complex structure, the nitrogen atom being involved in a heterocyclic ring.

Today a little over two thousand alkaloids are known, and it is estimated that they are present in only 10-15% of all vascular plants. They occur abundantly in the families, for example, of papaveraceae (poppies), solanaceae (tobacco, deadly nightshade, tomato, potato, thorn apple).

Well-characterized alkaloids have been isolated from the roots, seeds, leaves or bark of some forty plant families. It is true that simple alkaloids often occur in numerous, different plants while the more complicated ones as quinine, nicotine and colchicine are usually limited to one species or genus of plants and form a distinguishing characteristic of it.

The beginning of alkaloid chemistry is usually dated to 1805 when F.W. Sertürmer isolated morphine.

He prepared several salts of morphine and demonstrated that it was the principle responsible for the physiological effect of opium.

Among the important alkaloids discovered during the nineteenth century there were aconitine, one of the most toxic materials of plant origin known to man, atropine, colchicine, reserpine. Colchicine has been used for thousands of years in the treatment and diagnosis of gout. Although the substance is remarkably active, the mechanism of its action is uncertain. The difference between therapeutic and toxic doses is so minimal that the gout patients have little choice between treatment and colchicine poisoning.

Nicotine is a toxic alkaloid, 40 mg are fatal to man. At one time it was in wide use as an agricultural insecticide, but has now been removed by other chemicals.

Coniine is a hemlock alkaloid³. It is said that this principle is responsible for the death of Socrates⁴ when he drank the cup of poisonous hemlock.

Reserpine is an alkaloid of rauwolfia. Rauwolfia is found growing naturally throughout the tropics. All parts of the plant have been used internally or externally, to cure, and sometimes to kill. Rauwolfia in large doses may lead to temporary paralysis or death.

The modern story of Rauwolfia began in the late 1920's when Indian scientific researchers started reviewing the botanical drugs long used by native physicians. Since 1940 for ten years million Indian patients had received Rauwolfia for high blood pressure each year. Indian medical journals contained many enthusiastic reports of these clinical experiments but the western world placed more faith⁵ in synthetic drugs. "Wonder drugs" like the sulfas and barbiturates were "the drugs of the future". But Indian physicians continued their research.

In 1947 research laboratories in Switzerland were studying the alkaloids of Rauwolfia and by having used modern isolation techniques they

obtained new alkaloids which they named reserpine. Now reserpine is considered as the most active of all the plant components. A few grams of white crystals were equivalent in effect to more than 10,000 times the weight of the crude drug^b.

Perhaps the most famous work with reserpine was its total synthesis in 1956 by Dr. Woodward of Harvard⁷. Synthetic reserpine is now widely produced.

Notes:

1. magical potions - чудодейственное лекарство;
2. genera (pl. от genus – род, вид) and families – виды и семейства;
3. hemlock alkaloid - алкалоид болиголова;
4. Socrates - Сократ, знаменитый греческий философ, живший в V веке до н.э. в Афинах;
5. ... but the western world placed more faith - но западный мир больше доверял ... ;
6. 10, 000 times the weight of the crude drug - в 10.000 раз эффективнее, чем неочищенное лекарство;
7. Harvard - старейший университет США в г. Гарварде.

Exercise 1. Answer the questions. Express your opinion.

1. What problems does text 2 speak about? 2. What is the main idea of the text? 3. Have all plant constituents been discovered and investigated? 4. What is your idea about the future of alkaloid chemistry?

Exercise 2. Supply facts from text 2, confirming the following statements:

1. Alkaloid chemistry is a young science. 2. Alkaloids are not fully discovered and described. 3. Alkaloids have long been-used by man as drugs and poisons. 4. The most remarkable alkaloids are those obtained from rauwolfia.

Exercise 3. Find the paragraphs for which the following can serve as titles:

1. The sources of alkaloids.
2. The origin of the term "alkaloid".
3. Alkaloids discovered in the twentieth century.

Read text 3 and be ready for a comprehension check-up.

TEXT 3

SWEETENING AGENTS

1. A number of substances are now used to treat food during processing. These include colouring matters, flavours, sweeteners, nutritional supplements. During the twentieth century a number of substances have been introduced as synthetic sweetening agents as cyclamate, saccharin, dulcin, etc. These are not considered as sugar substitutes, since they have no nutritive properties, and don't possess the viscosity of natural sugar syrups, and some of them are even harmful. It is interesting that these sweetening agents were discovered accidentally. In 1879 Fahlberg, working in the laboratories of John Hopkins University, noticed that the sweet taste of some bread he was eating was due to the presence of tiny amounts of sulphonamide derivatives he had been preparing. The new compound was 500 times as sweet as sucrose and was produced on an industrial scale in 1900 as saccharin. It was soon widely used by diabetics, including the late Theodore Roosevelt¹. Saccharin has remained the only major synthetic sweetening agent and is widely used commercially in diabetic foods, low calories fruit drinks and medicinal preparations in the USA and a number of other countries.
2. The discovery of cyclamate was due to accidental contamination of a cigarette being smoked by a research student Michael Sveda at the University of Illinois (USA) in 1937. Sveda was investigating the use of sulphanilic acid derivatives as antipyretics at the time and traced the sweet taste on his cigarette to sodium cyclamate. Three years later Sveda joined the Du Pont Company² and several cyclamate salts were patented as sweetening agents.
3. Cyclamate is manufactured from cyclohexylamine as the calcium or sodium salt, although a number of alternative routes are used. The sweetness of cyclamate is about 72 times that of sucrose, no toxic or unpleasant side-effect having been definitely associated with it. Later investigators have shown that cyclohexylamine, a possible metabolite of cyclamates can produce chromosome breaks³ in test animals which in humans could lead to blood diseases, shortening of life and genetic abnormalities. Since 1970 the use of cyclamates has been banned in the USA and other countries.
4. The sweetest synthetic substance known at present is P400 discovered in 1940 – an orange coloured substance, 4,000 times as sweet as cane sugar. The relation of structure to sweetness has naturally been of great interest to chemists for almost a century. Experiments in this field recently carried out showed the link between molecular form and sweetness. One of the difficulties in such work is the personal factor which enters into the measurements of a sensation such as sweetness. This is complicated by

the conditions under which tasting takes place. Thus, temperature, the presence of other substances, concentration and solubility in test media all affect the results obtained. Normally the sweetening agent is compared with a standard (5%) solution of cane sugar in water or other media.

Notes:

1. Theodore Roosevelt (1858-1919) - Теодор Рузвельт, американский политик, обладатель Нобелевской премии;
2. Du Pont Company - фирма Дюпон (США), крупнейший химический трест;
3. chromosome breaks - деление хромосомы.

Exercise 1. Complete the sentences choosing the proper phrase that corresponds to the contents of the text.

1. There is a number of substances that are used ... during processing (a) to treat people; b) to treat animals; c) to treat food). 2. One of the scientists working in the laboratories of John Hopkins University noticed that the sweet taste of some bread he was eating was due to ... (a) large amounts of the substance; b) small amounts of the substance; c) very small amounts of the substance). 3. The relation of structure to sweetness has been of great interest to ... (a) doctors; b) pharmacists; c) chemists). 4. The discovery of cyclamate was due to ... of a cigarette being smoked. (a) constant contamination; b) regular contamination; c) accidental contamination). 5. Sweetening agents have no nutritive properties and some of them are ... (a) useless; b) harmless; c) harmful).

Exercise 2. In text 3 find the sentences that describe:

1) the sweetness of saccharin; 2) that the discovery of cyclamate was made accidentally; 3) that cyclamate is harmless to the organism; 4) that saccharin is used in medicine in the treatment of some diseases; 5) the relation of structure of the substance to its sweetness; 6) that the determination of sweetness is influenced by number of factors.

Exercise 3. Answer the questions to text 3.

1. What does the first paragraph deal with? 2. What does the second paragraph describe? 3. What does the third paragraph speak about? 4. What is described in the fourth paragraph?

Read the article "One cactus juice or two with your tea?" and answer the questions using underlined words.

1. What are the advantages of a sweetener Agave nectar over sugar and other sweeteners?
2. Why do the researchers claim people will satisfy their sweet tooth in a healthier way using a new sweetener?

From "London Life" 21 September 2006

ONE CACTUS JUICE OR TWO WITH YOUR TEA?

Fat fighter is substitute for sugar

Healthy option: the Blue Agave nectar is not as fattening as sugar

A SWEETENER made from cactus juice that could replace sugar will go on sale next week.

Agave Nectar is not only sweeter and healthier than sugar – it can help people lose weight.

The honey-like liquid comes from the juice of a Mexican cactus called the Blue Weber Agave – the same plant used to produce tequila.

It is said to reduce sugar *cravings* (*страстное желание*) and burns off fat rather than storing it, because it is absorbed into the bloodstream more slowly and does not need insulin to break it down.

Diabetics can consume the juice as it has a very low glycaemic index and so does not produce a rapid rise in blood sugar levels.

Experts say that those who use it will not have "sugar rushes", the extreme highs and lows that occur after consuming sugar.

The nectar, which contains 76 per cent fructose, tastes like a combination of honey and *maple* (*кленовый*) syrup. It is 25 per cent sweeter than sugar and because it *is not processed* (*не обрабатывается*) – unlike most other sweeteners – it provides vitamins and minerals.

Tesco is planning to have the nectar on its shelves next week, and hopes it will help people satisfy their sweet tooth (*удовлетворять свою потребность в сладком*) in a healthier way.

Spokesman David Cooke said: "What makes it so special is that, unlike other sweeteners, it helps keep the body's blood sugar levels balanced which can help our moods remain constant.

"Unfortunately, with sugar and other sweeteners we get an initial energy rush which is quickly followed by a crashing low when the effect *wears off* (*проходит*).

“Unlike honey, it dissolves almost instantly so is perfect in tea and coffee, on cereals and for baking”.

Nutrition expert Dr Barbara Wilson said: “Agave nectar is a natural product and very versatile”.

The product is also long-lived – if kept out of sunlight and in a cupboard it should last three years.

The cactus’s more famous use is for tequila, which has been made in Mexico for the past 200 years from fermented juices obtained from the hearts of the plants.

- Cancer-causing chemicals are common in small quantities in foods sold across Europe, a new study has found. Researchers for the WWF analysed 27 different foodstuffs from countries around Europe for eight different groups of man-made chemicals and found potentially harmful chemicals in all of them.

Read the article from the newspaper “Trud”. Entitle the article and render it in English.

Столловый сахар – дисахарид, соединение, молекула которого образована из связанных между собой молекул глюкозы и фруктозы. Еще к сахарам относятся лактоза (молочный сахар), фруктоза, мальтоза (солодовый сахар), стахиоза (сахар, который встречается в бобовых), галактоза и трегалоза (грибной сахар). А что вообще нужно организму из перечисленных сахаров?

Нужна глюкоза, она участвует в образовании топлива для мышц и подпитывает мозг. Много глюкозы содержится в ягодах, а в чистом виде ее принимают исключительно в медицинских случаях. В норме же глюкоза выделяется из углеводов, когда мы принимаем пищу, в частности столовый сахар. В ткани ее разносит инсулин, он выбрасывается поджелудочной железой. Когда сахаров поступает слишком много, часть их отводится в жировые ткани и там они превращаются (to convert) в жир.

Вдобавок при избытке (excess) сахара увеличивается количество пенных (foamy) веществ и ненужных бактерий в кишечнике, в котором образуется излишнее количество газов, а на стенке могут появиться трещинки (fissures).

Организму сахар в малых количествах не повредит (to harm), хотя ценность его не питательная, а только энергетическая. Среднесуточная (average daily) потребность в сахаре составляет от 50 до 100 граммов (с учетом сахара, содержащегося в продуктах). Вообще без сахара человеческий организм не протянет (can’t do without), полностью

отказавшись (giving up) от погрешения сладкого, человек рискует превратиться в идиота.

Этот «белый яд» активизирует кровообращение в головном и спинном мозге (spinal marrow), и полный отказ от сахара может вызвать склеротические изменения. Кроме того, установлено, что сахар избавляет кровеносные сосуды во всем теле от опасности образования на стенках бляшек (plaques), а значит, предотвращает (to prevent) тромбозы. Да и артриты (arthritis) у людей, не отказывающихся от сахара, бывают реже. Он также нормализует работу печени и селезенки, способствует лучшему сращиванию (fusion) костей при переломах (fractures).

Иногда врачи советуют вместо столового сахара принимать фруктозу. Она более сладкая, содержится в фруктах и меде и практически не требует участия инсулина, поэтому ее можно использовать даже при диабете (diabetes mellitus). Однако исследования показали, что фруктоза не идеальный заменитель (substitute) столового сахара. Она дает те же 4 калории на грамм, что и прочие сахара, зубы от нее разрушаются (to decay) точно так же, как от сахарозы, а при злоупотреблении (misuse) фруктозой возможны неблагоприятные изменения липидного состава крови.

Еще сложнее потреблять молочный сахар- лактозу, содержащуюся в молочных продуктах. Часть людей не могут принимать лактозу из-за отсутствия расщепляющего (splitting) ее фермента, да и по зубам она бьет так же, как столовый сахар. Ну а мальтоза, неблагоприятно влияет на содержание сахара в крови.

Теперь обратимся к заменителям сахара – они предлагаются нам как его альтернатива, диетический продукт. В развитых странах на заменителях, которые в 200-400 раз слаще сахара, «сидит» довольно большая часть населения.

У основной массы подсластителей (sweetening agents) та же калорийность, что и у сахара, и они способны заменять его во многих продуктах. Правда, организмом они усваиваются хуже. Сахарный спирт, гидрогенизированный сироп глюкозы и ксилит помогают предотвратить кариес (to prevent caries) и используются в безвредных для зубов видах сладостей и жевательных резинок. При этом любой подсластитель может стать причиной расстройства работы кишечника (stomach upset), если потреблять более 25 граммов в день.

У подсластителей есть сторонники и противники. Последние утверждают, что многие заменители сахара обладают свойствами генерировать раковые опухоли (cancer tumors), однако прямых доказательств (evidence) этого до сих пор не получено. Сахарин, например, используют без каких-либо вредных последствий уже более 50 лет. Однако маленьким детям подсластители давать все же не

рекомендуется, так как долгосрочные (long-term) исследования о влиянии этих веществ на организм не проводились.

PART IV. Speech Exercises

Exercise 1. *Introduce the following statements with one of the most suitable beginnings: It is well known; I think (that) ...; in my opinion, it is interesting to note, it is necessary to add. To each statement add two sentences to the point.*

1. Plant constituents of medical importance form a large group of compounds varying in solubility and stability. 2. Alkaloids have been utilized from ancient times as medicines, poisons, and medical portions. 3. Today a little over two thousand alkaloids are known. 4. Simple alkaloids often occur in numerous, different plants while the more complicated are usually limited to one species or genus of plants. 5. Coniine is responsible for the death of Socrates when he drank the cup of poisonous hemlock. 6. The modern story of Rauwolfia began when Indian scientific researchers started reviewing the botanical drugs long used by native physicians.

Exercise 2. *Complete the sentences giving at least two variants.*

1. Many naturally occurring pigments are 2. Late investigations have shown that some cyclamate derivatives 3. Saccharin has remained the only major synthetic sweetening agent which 4. Very effective drugs of plant origin that have come from early times 5. The amino acids are 6. Proteins differ so much in their solubility that

Exercise 3. *Develop the ideas expressed in the following statements. Try to use the introductory phrases to underline your opinion and own experience: It seems to me (that); in my opinion; in my experience; to my mind.*

1. The living organism may be considered a biosynthetic laboratory. 2. The plant constituents such as fatty acids, phenols, alkaloids, carbohydrates, glycosides are of special interest to the pharmacist. 3. The application of alkaloids in medical practice has a long history. 4. In medicinal purposes sugar may be successfully substituted.

Exercise 4. *Prove that:*

a) in some cases it is possible to do without sugar: b) alkaloids may be used as drugs and poisons at the same time.

Exercise 5. *Make up your own situations on the proposed topics.*

1. A friend of yours suffers from a high blood pressure. You want to recommend him reserpine, an alkaloid of rauwolfia, one of the best medicines, to your opinion. 2. You are a lecturer at the biochemistry chair. At the practical classes you are speaking about the classification of the plant constituents of special interest to the pharmacist. 3. You are a specialist in pharmacology at the pharmaceutical plant. You try to prove that medicines of plant origin possess greater advantages over synthetic and that it is necessary to increase the production of drugs of plant origin.

Exercise 6. *Get ready to speak on the problem "Active constituents of drugs". Use the following outline:*

1. The effect of active constituents of drugs on man's organism.
2. Classification of plant constituents of medical importance.
3. Short characteristics of the described classes.
4. Plants are sources of drugs and their constituents.
5. Drugs of plant origin have been used since old times.

SECTION 5

Topic for reading and discussion

"PLANTS AS SOURCES OF DRUGS"

- Grammar:**
1. Absolute Participial Construction:
 2. An adverb 'well'.

PART I. Structure Recognition

Table 1.

Models of translation of Absolute Participial Construction.

- | | |
|---|--|
| 1. <u>Argon forming 1 per cent of ordinary air.</u> it is particularly difficult to separate it from oxygen by distillation | Так как <u>аргон составляет 1% обычного воздуха.</u> то его особенно трудно отделить от кислорода путем дистилляции. |
| 2. Chromatography <u>having opened up new fields of medical research.</u> chromatographic methods began to develop rapidly. | После <u>того.</u> как <u>хроматография открыла</u> новые области медицинских исследований. хроматографические методы начали быстро развиваться. |
| 3. <u>The equipment permitting.</u> we shall start a new series of tests. | Если <u>оборудование позволит.</u> мы начнем новую серию опытов. |
| 4. Carbohydrates are compounds containing the elements of carbon, hydrogen and oxygen. <u>the last two elements being usually present</u> in the proportion in which they are found in water. | Углеводы – это соединения, содержащие элементы: углерод, водород и кислород. <u>причем два последних элемента обычно присутствуют</u> в той пропорции, в которой они находятся в воде. |

Exercise 1. Study the translation patterns of Absolute Participial Construction given in Table 1 and practise in translating the following sentences:

1. Sugars contain from three to nine carbon atoms, these with five and six carbon atoms being the most important.
2. Sugar molecules consist of different atoms, each sugar molecule having its own special atom.
3. Fructose being present in the hydrolysis product, positive tests were obtained.
4. Chromatographic methods having been developed, specialists in chemistry, botany and other sciences began to apply them widely in their research.
5. Phosphate being an important major constituent of raw materials, its study is also of particular interest.
6. The temperature of the mixture having reached its boiling point, the separation of the components of the mixture stopped.

7. The amounts of magnesium being 0.8% less than normal, additional compounds containing magnesium salts were added.
8. Metallic silver being filtered and dissolved in 25 ml of hot nitric acid, the resulting solution contained ferric ammonium sulphate as an indicator.

Exercise 2. Note that *Absolute Participial Construction*, expressing attending circumstances, occupies the final position in the sentence. Translate the sentences with *Absolute Participial Construction*. For reference see Table 1 point 4.

1. The source of vitamin A is in the carotenoid pigments, the yellow-colored compounds occurring in all chlorophyll-containing plants.
2. The reaction depends on the number of ions present, the substance being more ionized in dilute solution.
3. Oxygen combines with most elements, the product formed being called an oxide.
4. The sodium atom has eleven electrons, the eleventh one occupying a position in the third orbit.
5. Vitamins perform important functions in the organism, vitamin A being essential for maintaining normal epithelial tissue.
6. The food for man and animals contains small amounts of vitamins, the human requirement for vitamin A being 5000 units daily.
7. The small flowered *Viola tricolor* was the only cultivated form before 1810, recent breeding having produced larger and larger flowers with more and more color variation.

Exercise 3. Find the sentences with *Absolute Participial Construction* and translate them into English.

1. The problem having been approached from different points of view, its practical significance was stressed again.
2. Several major drugs are derived from opium, morphine and codeine being among them.
3. The roots of *Adonis vernalis* contain drugs with properties similar to those of *Digitalis*, having a stimulating effect on the heart.
4. Valerian has a strongly aromatic scent when bruised, this being attractive to cats which roll on damaged plants in an intoxicated manner.
5. The report having aroused a great interest both among the students and the specialists, the latter took part in discussion too.
6. The active constituents of drugs may in some case be separated from the inert tissue of the plant by the simple process of draining or expressing the juice from the fresh material.

7. Proteins are highly complex compounds elaborated by living cells, containing the elements carbon, hydrogen, oxygen, nitrogen, and usually sulphur.
8. Foxglove containing a strong heart stimulant, it has been collected for the preparation of medicines.
9. Rosewater is prepared from the flowers of three rose groups: *Rosa centifolia* (Cabbage Rose), *Rosa damascena* (Damask Rose) and *Rosa indica* (Tea Rose), the latter being the most important species in each group.

Exercise 4. Note that *Absolute Participial Construction* is an equivalent of the *subordinate adverbial clause of reason, time, manner, etc.*

Compare:

- | | |
|---|--|
| <p>A Since the temperature had reached the boiling-point, the heater was switched off.</p> | <p>B The temperature having reached the boiling-point, the heater was switched off.</p> |
|---|--|

Sentence B is more formal. Rewrite the sentences as in B.

1. As technology has reached a high stage of development, new methods of work have become possible.
2. Since the method of alkaloid purification was the best described, we used it in our work.
3. Since no satisfactory results had been obtained, we started a new series of experiments.
4. When the sterilization of the medium is done, the highest temperature is maintained for 40 minutes.
5. After the reaction was over, the solution was treated on a water-bath for 30 minutes.
6. When some of the vitamins are deficient in the diet, there occurs a deficiency disease.
7. Since the drug is rapidly destroyed in the body, its action by means of intravenous injections is of a short duration.

Exercise 5. Add *Absolute Participial Construction* expressing attending circumstances to the sentences given below. The subject and the verb in brackets will help you form the construction.

Model: Tea catechols improve functioning of very small blood vessels, (normal condition to be reached) within 2-3 weeks.
Tea catechols improve functioning of very small blood vessels.

normal condition being reached.

1. The types of anti-inflammatory dosage are recognized. (maintenance dose to be rather small).
2. In both mild and severe infections the usual dose makes up 0.1 gm per kg of body weight per day, (the type of drug to depend ...).
3. A great number of plant constituents may now be prepared synthetically, (isolation of them to be an easy method).
4. In the fourth stage ampoules are packed, (the storage temperature to be regulated ...).
5. The powdered drug is extracted with water or aqueous alcohol, (pigments to be removed from ...).
6. The therapeutic properties of galenicals are not always identical with those of the pure alkaloids or alkaloidal salts, (galenicals to exert an action ...).
7. The plant grew under irradiation for a period of 10 hours, (green light to be followed by red one).

Exercise 6. Study the translation patterns of an adverb "well".

- | | |
|--------------------------------|---------------------------------|
| 1. well + verb, well + P. II | - хорошо, вполне; |
| 2. well + modal verb | - вполне, с успехом; |
| 3. well + adverb (conjunction) | - значительно, очень, довольно; |
| well after | - значительно позже; |
| well before | - задолго до; |
| as well | - также; |
| as well as | - так же как, а также. |

Pay attention to the emphatic character of such word combinations as:
as many as (as much as, as early as, as long as, etc.) + numeral

They are used to make the language more expressive and clear.

As many as 3.000 of Britain's villages ... – По крайней мере 3000 деревень Англии

Exercise 7. Translate the following sentences paying attention to the underlined words:

1. The poisonous nature of foxglove leave was well known and the drug was recommended by Parkinson in 1640 and it was introduced into the London Pharmacopoeia in 1650.

2. The drug is ordinarily administered by the oral route, but can be injected intramuscularly or intravenously as well.
3. In Europe during the 1914-1918 war the bilberry berries were used on a large scale for dyeing wool as well as for food.
4. The berries of raspberry are used for jams and pies as well as for making delicious wine.
5. As well as being cultivated for its fibers, the seeds of cultivated flax are pressed to obtain linseed oil.
6. Results of one of the largest climate prediction projects ever run suggest temperature around the world could rise as much as 11°C.
7. Experiments made as early as 1873, and confirmed later, demonstrated that animals are unable to survive on a diet consisting of purified protein, fat and starch.
8. The sepals of *Adonis vernalis* are half as long as the petals.
9. The terminal leaflet of field pansy is usually twice as large as the lateral ones.
10. As many as 3000 kg of petals are required to produce 1 kg of rose oil.
11. The olive was known in Egypt as early as the seventeenth century B.C. and was introduced into Spain at an early period.
12. Canadians were heavier smokers per capita than Americans as recently as 1989.

PART II. Vocabulary Learning

Exercise 1. Read the words of Latin and Greek origin and try to translate them using your knowledge of the Russian, Latin and English languages.

Margarine [mɑːdʒəˈri:n], ornamental [ˌɔːnəˈmentl],
 suppressant [səˈpresənt], exploit [ɪkˈsploɪt], version [vɜːʃən],
 herb [hɜːb], expert [ˈeksɜːpt], euphoric [juːfjʊˈɔːrɪk], ingredient [ɪnˈɡrɪːdɪjənt],
 leukemia [ˈtʃuːˈkiːmiə], narcotic [nɑːˈkɔːtɪk], morphine [mɔːˈfiːn],
 revolutionize [ˌrevəˈluːʃnəɪz], medication [ˌmedɪˈkeɪʃən], model [ˈmɒdl],
 antidote [ˈæntɪˈdaɪt], schizophrenics [ˌskɪzəˈfrenɪks], mental [ˈmentl],
 bronchitis [brɒŋˈkæɪtɪs], estrogen [ˈɛstrɒdʒən], relaxant [rɪˈlæksənt],
 testosterone [ˌtestɪˈstɔːrɒn], progesterone [ˌprɒdʒɛˈstɔːrɒn],
 jungle [ˈdʒʌŋɡl], stimulant [ˈstɪmjʊˈlənt], cocaine [kəˈkeɪn],
 civilization [ˌsɪvɪlɪˈzaɪzɪʃən], depressant [dɪˈpresənt], illegal [ɪˈlɪɡəl],
 heroin [ˈhɛrɒɪn], marihuana [ˌmæriˈhwaːnə], hashish [ˈhæʃɪʃ],
 nicotine [ˈnɪkətiːn], codeine [ˈkəʊdeɪn], papaverine [ˌpæpəˈvaɪrɪn],
 collapse [kəˈlæps], noscapine [ˌnɒskəˈpiːn],
 asthma [ˈæsmə], migraine [ˈmiːgreɪn], neurologic [ˌnjuːrəˈlɒdʒɪk],
 spasmolytic [ˌspæzˈmɔːlɪtɪk], stimulant [ˈstɪmjʊˈlənt],

tranquillizer [ˈtræŋkwɪlaɪzə], diuretic [ˈdaɪjʊəretɪk], euphoric [ju(:)ˈfɔːrɪk]
 coca [ˈkɔ:kə].

Exercise 2. Test yourself whether you remember the words and their derivatives used in the previous lessons. Identify their parts of speech.

To derive, derivative; to refer, references; poison, poisonous; a list, to list; species; to treat, treatment; cancer, cancerous; fungi, fungal; to prescribe, prescription; an effect, to effect, effective; medicine-man, medication; an extract, to extract, extraction; harvest, to harvest, harvested; stimulus (i), stimulant; to measure, a measure, measurement; a market, to market, marketed; legal, illegal(ly); cost, to cost; benefit, beneficial; fever, fevered, feverish; insect, insecticides; product, production, to produce; sense, sensitive; indicate, indication, contraindication; pain, painful, painless, to relieve pain.

Exercise 3. Read and memorize the words of the active vocabulary.

a) words relating to diseases, their diagnosis and treatment:

cancer [ˈkænsə], n	- рак;
cardiac insufficiency [ˈkɑːdiæk ɪnsəˈfɪʃənsɪ]	- сердечная недостаточность;
disorder [dɪsˈɔːdə], n	- расстройство;
attack [əˈtæk], n	- приступ, припадок;
v	- поражать, разрушать, воздействовать;
inflammation [ɪnfləˈmeɪʃən], n	- воспаление;
heal [hi:l], v	- 1) излечивать, исцелять (of -от); 2) заживать, заживляться (часто ~ over, ~ up);
hay fever [ˈheɪ, fi:və]	- сенная лихорадка;
nausea [ˈnɔːsjə], n	- тошнота;
congestion [kənˈdʒestʃən], n	- закупорка, застой (напр. крови, желчи);
side-effect, adverse effect [saɪdɪˈfekt]	- побочное действие;
vertigo [ˈvɜːtɪɡəʊ], n (pl. -os)	- головокружение;
whooping cough [ˈhuːpɪŋ kɔːf]	], n - коклюш;
ulcer [ˈʌlɪsə], n	- язва;
heartburn [ˈhɑːtbɜːn], n	- изжога;
abuse [əˈbʌs], n	- неправильное или ошибочное употребление (например)

	лекарственного средства); злоупотребление, - злоупотреблять ~ of narcotics наркомания; drug ~ наркомания;
addict [ædɪkt], <i>n</i>	- наркоман;
addiction [ædɪkʃən], <i>n</i>	- наркомания, склонность, пагубная привычка;
sensitivity [sensɪtɪvɪti], <i>n</i>	- чувствительность (напр. к лекарственному средству);
administer [əd'mɪnɪstə], <i>v</i>	- давать, назначать, применять (лекарственное средство);

b) words connected with drug classes:

anti-inflammatory [æntɪɪnflæmətəri], <i>a</i>	- противовоспалительный;
antipyretic [æntɪpaɪrɪtɪk], <i>n</i>	- жаропонижающее средство;
	<i>a</i> - противолихорадочный, жаропонижающий;
cough suppressant [kɒf səpresənt], <i>n</i>	- средство от кашля;
expectorant [ekspektərənt], <i>n</i>	- отхаркивающее средство;
muscle relaxant [mʌsl rɪ'læksənt], <i>n</i>	- миорелаксант;
pain-killer [peɪn,kɪlə], <i>n</i>	- разг. болеутоляющее средство;
vasoconstrictor [veɪsəʊkənstriktə], <i>n</i>	- сосудосуживающий фактор, вазоконстриктор;
	<i>a</i> - сосудосуживающий;
vasodilator [veɪsəʊdɪlətə], <i>n</i>	- сосудорасширяющий фактор, вазодилатор;
	<i>a</i> - сосудорасширяющий.

c) words relating to pharmacy:

decoction [dɪkəʊkʃən], <i>n</i>	- 1) вываривание; 2) лечебный отвар, декокт;
poultice [pəʊltɪs], <i>n</i>	- припарка;
	<i>v</i> - класть припарки;
powder [paʊdə], <i>n</i>	- порошок;
	<i>v</i> - превращать в порошок, толочь;
principle [prɪnsəpl], <i>n</i>	- составная часть; элемент;
tincture [tɪŋktʃə], <i>n</i>	- 1) тинктура, настойка; 2) привкус, примесь.

d) names of medicinal plants:

periwinkle [perɪ,wɪŋkl̩]	- барвинок малый (<i>lat. Vinca</i>);
snakeroot [sneɪkrʊ:t]	- кирказон (<i>lat. Aristolochia</i>);
thyme [tʰaɪm]	- тимьян, чабрец (<i>lat. Thymus</i>);

hemp [hemp] - индийская конопля, гашиш
(лат. *Cannabis sativa*);

e) general scientific and neutral words:

advertise [əd'vɜ:tlaɪz], v - рекламировать;
 consume [kən'sju:m], v - 1) потреблять, расходовать; 2) съедать, поглощать;
 dilate [dai'leɪt], v - 1) расширять(ся); 2) распространять(ся);
 distribute [dɪ'strɪbjʊ:t], v - 1) распределять, раздавать ; 2) разбрасывать (равномерно);
 market [mɑ:kɪt], v - продавать, сбывать, находить рынок сбыта;
 prevent [prɪ'vent], v - предотвращать, предохранять, предупреждать;
 reference [rɪ'fɛrəns], n - 1) ссылка, сноска; 2) справка;
 v - находить по ссылке, справиться;
 sample ['sɑ:mpəl], n - 1) образец, образчик; 2) проба; 3) шаблон, модель;
 v - 1) отбирать образцы; 2) пробовать, испытывать;
 search [sɜ:tʃ], n - 1) поиск; 2) исследование, изыскание;
 v - (*for*) - искать, (*out*) - разыскивать, найти.

Exercise 4. Study the Table and fill in the part of it dealing with brief explanation of some English word elements taking into account Latin and Greek terms.

Word Elements Associated with Pharmacology		
Wr/cf ^a Term, and Pronunciation	Word Analysis	Brief Explanation
Analgesic (an-al-JE-sik)	(p) an= without (wr) alges= pain (s) -ic= pertaining to	pertaining to a drug that relieves pain
chemotherapy (ke-mo-THER-a-pe)	(cf) chem/o=chemical (s)-therapy=treatment	
dermal (DER-mal)	(wr)derm=skin (s)-al=pertaining to	
Adrenergic (ad-ren-ER-jik)	(wr) adren=adrenal gland	

	(wr) erg=work (s)-ic=pertaining to	
Antihelminthic (an-ti-hel-MIN-thik)	(p) anti=against (wr) helminth=worm (s)-ic=pertaining to	
Narcotic (nar-KOT-ik)	(cf)narc/o=numbness or stupor (s)-tic=pertaining to	
Parenteral (par-EN-ter-al)	(p)par(a)=beside (wr)enter=intestines (s)-al=pertaining to	
Prophylaxis (pro-fi-LAK-sis)	(p) pro-=before (s)-phylaxis=protection	

a wr/af = word root/combining forms

Exercise 5. Translate into Russian the words and word combinations of the same root:

Рак – cancerous, cancerogenic, cancerology; сердце – heartburn, heart disease, heart failure; исцелять – heal-all, healer, healing; воспалять – inflammation, (anti-) inflammatorу, inflammable, inflammability; язва – ulcerate, ulcered, ulcerous; рекламировать – advertisement, advertiser; ссылаться – referable, reference, referee; расширять – dilatability, dilator, dilatator; потреблять – consumer, consumption, consumptive; распределять – distributing, distribution, distributive, distributor; образцы – sampling, sampler; наркоман – addiction, addictive; чувство, ощущение – senseless, sensitive, sensitivity.

Exercise 6. Match the nouns with the correct definitions:

1. decoction	a) any of the various plants whose roots have been regarded as a remedy for snake bites
2. medication	b) a drug made from dried leaves and flowers of Indian hemp, smoked in cigarettes to produce a narcotic-like effect
3. tincture	c) anyone of a group of plants with tall stalks having many large bell-shaped, purple, yellow or white flowers
4. principle	d) the act of putting medicine on (in)
5. leukemia	e) an allergy caused by the pollen of ragweed and certain other plants characterized by sneezing, a running nose and itching of the nose, throat and

	eyes
6. foxglove	f) blood cancer characterized by a large excess of white blood cells
7. stimulant	g) a drug or other substance that reduces the body's reactions and relaxes muscles
8. depressant	h) one of the elements that compose a substance especially one that gives some special quality or effect
9. marijuana	i) a food, drug or medicine that temporarily increases the activity of the body or some parts of the body
10. hay fever	j) a solution of medicine in alcohol or in a mixture that is chiefly of alcohol
11. snakeroot	k) the act of boiling to extract some desired substances

Exercise 7. Arrange the words into the group of synonyms:

- | | |
|-----------------|-----------------------------|
| 1. medication | a) pollinosis |
| 2. disorder | b) model |
| 3. to consume | c) mention |
| 4. hay fever | d) to sell |
| 5. marijuana | e) natural-products chemist |
| 6. medicine-man | f) medicament |
| 7. to heal | g) to expend |
| 8. sample | h) Indian hemp |
| 9. reference | i) sickness |
| 10. to market | j) to cure |

Exercise 8. Form the verbs of an opposite action using the following prefixes: *de-*, *ex-*, *mis-*, *dis-*, *un-*, *in-*.

Model: compose – decompose
include – exclude

place, cover, card, wrap, qualify, use, compile, change, well, include, increase, form, considerable, hydrate, stop, change, toward, order, believe, absorbable, saturated, arrange, like, naturalize, generate, advantage, addictive, treat, agree, approve, constant, effective, manage, curable, alcoholic.

Exercise 9. Translate the sentences paying attention to the use of synonymous verbs and their derivatives:

to treat, to cure, to heal, to recover

1. This patient is treated for cancer. They treated her for whooping-cough. The doctors treated the patients attentively.
2. It's difficult to cure the patient because the disease is incurable. Her cough is completely cured.
3. You'll recover from your illness soon if you follow the doctor's advice. He recovered his health after having a long rest in the sanatorium.
4. Herbalists know the healing power of different herbs. His cutting wound is healing well.

Exercise 10. Find the proper answer(s) to the following questions:

1. How many of these things can you catch?

a) a headache;	d) the train;
b) a cancer;	f) an infectious disease;
c) (a) cold;	e) toothache.
2. Which one of these things has nothing to do with illness, disease or ailment?

a) cardiac insufficiency;	c) vertigo;
b) heart burn;	d) a broken heart.
3. If a man says he gets hay fever every summer, it means that he ...

a) gets inflammation of the lungs;	c) is allergic to something in the air.
b) has high temperature because of a strange infection;	
4. Which of these things do most people usually think as a more serious?

a) a disease;	b) a disorder.
---------------	----------------
5. Which of these medicines are recommended in colds:

a) vasodilator;	e) cough suppressant;
b) stimulant;	f) vasoconstrictor;
c) diuretic;	g) antipyretic;
d) expectorant;	h) analgesic.
6. Which of these things can be dilated?

a) market;	c) pupil;
b) vessels;	d) sample.
7. What do we say when we have recovered?
The doctor ...

- | | |
|---------------------|--------------------------------|
| a) has cured you; | c) has given you a certificate |
| b) has treated you; | of health. |

Exercise 11. Read and translate the following word combinations:

A huge storehouse of drugs, hungry animals, to search for the compounds, to search through the bounty of chemicals, natural-products chemists, the healing power of plants, herbal medical practices, to sample plants, several plant-based medicines, the joy-plant, euphoric principles, an arrow poison, to list plants by their use, a detailed list of pharmaceutical plants, alkaloid-derived drugs, compounds modeled after plant-derived substances, a common ingredient in medication, mental disorders, to treat with reserpine, annual prescription for reserpine, to ease bronchitis, birth control pills, hunger depressant, to chew coca leaves, the world's leading producer of hemp, to consume in large amounts, to benefit people; drug-and-surgery-based medicine, purifying and cleansing properties of plants.

Exercise 12. Read the sentences, find and translate the words of the active vocabulary. Make up your own sentences using the active words.

1. The medicine consumed will soon heal your wound.
2. Rauwolfia, also known as the snakeroot plant is the source of reserpine, a relaxing drug.
3. He consumed almost all the money he earned last summer.
4. A new pain-killer, propoxyphen hydrochlorine is as effective as codeine.
5. Eating the wrong food can cause a stomach disorder.
6. The pupil, which is the only place where light can enter the eye, dilates and contracts, thus controlling the amount of light that strike the retina.
7. Manufacturers advertise products that they wish to sell.
8. The vertigo is caused by changes of the blood supply in the head.
9. Most of the ship's passengers were seized with nausea during the storm at sea.
10. The doctor gave her powders to take as a medicine.

Exercise 13. Translate from Russian into English. For reference you may use exercises 2, 3 and 5.

1. Не принимайте лекарство без назначения врача.
2. Это лекарство снимает головную боль (уменьшает насморк, понижает кровяное давление).
3. Если возникнет выраженная побочная реакция, прекратите давать это лекарство.

4. Я полагаю, что в данном случае мы имеем дело с повышенной чувствительностью к лекарству.
5. Препарат противопоказан при язвенной болезни желудка (бронхиальной астме).
6. Предупредите этого больного о возможности появления головокружения, сыни при приеме этого препарата.
7. Этот препарат оказывает жаропонижающее (успокаивающее, болеутоляющее) действие.
8. При применении этого препарата могут наблюдаться явления пристрастия.
9. При повышенной чувствительности к препарату возможно-(а) покраснение лица (легкое головокружение, тошнота, рвота, изжога).
10. Препарат не токсичен, усиливает сосудосуживающий (сосудорасширяющий) эффект.
11. Препарат обычно хорошо переносится.
12. Я вам выпишу откашливающее (болеутоляющее, жаропонижающее) лекарство.

PART III. Reading Comprehension

Read and translate the following text.

TEXT I

NATURE'S BOTANICAL MEDICINE CABINET

Just as people learned to exploit plants for food, so they learned to use plants as medicine. Plants represent a huge storehouse of drugs; they produce more than 10,000 different compounds to protect themselves from hungry animals. People that search for these compounds are natural-products chemists.

Today, nearly half of all prescriptions of drugs contain chemicals manufactured by plants, fungi, or bacteria. Many other drugs contain compounds that were synthesized in a laboratory but modeled after plant-derived substances.

A good example of medicine derived from plants used today are the chemicals called alkaloids which come from the periwinkle plant and other species. Alkaloid-derived drug such as leucocristine and vincalokoblastine (born from periwinkle) have helped revolutionize the treatment of some leukemias (blood cancers), and alkaloid narcotics derived from the opium poppy, including morphine, are excellent (but addictive) pain-killers.

Here are some of the more common drugs derived from plants and a fungal parasite of a plant.

Reserpine is extracted from snakeroot (*Rauwolfia Serpentina*, a low evergreen shrub) and is used as a sedative and to decrease blood pressure. In India, snakeroot is used to make an antidote for snakebites. Many schizophrenics and others with mental disorders can lead nearly normal lives after being treated with reserpine.

Ephedrine is extracted from Ephedra. The Chinese used ephedrine medicinally more than 4,700 years ago. Drug ephedrine being widely used in the treatment of asthma, to ease bronchitis and to relieve nasal congestion, still is extracted from a Chinese species, but most now in use is synthetically produced.

Steroids such as estrogens and testosterone are extracted from yams (*Dioscorea*). The progesterone used to make the first birth control pills was extracted from 10 tons of yams harvested from the Mexican jungle.

Digitoxin, extracted from *Digitalis purpurea* (foxglove, a garden ornamental), is taken as a heart stimulant by more than 3 million Americans each day.

Cocaine comes from the leaves of *Erythroxylon coca*. Cocaine is a stimulant and hunger depressant, which explains why poor laborers can work for two or three days without food while chewing coca leaves. The laborers even measure distances in cicadas, the distance they can walk on one chew. Today, cocaine is marketed illegally in highly addictive forms, with enormous costs to society.

Tetrahydrocannabinol (THC) is derived from hemp (marijuana, *Cannabis sativa*) and is used to make hashish.

Nicotine, which comprises 1%-3% of the weight of tobacco, is an ingredient of many insecticides. It is also usual for killing intestinal worms in farm livestock. It is, however, an addictive drug. When nicotine is used by humans, it is a primary cause of heart and respiratory diseases, including lung cancer and other cancers, such as those of the mouth and throat.

Belladonna, a drug complex, is extracted from leaves of Deadly nightshade of Europe. Belladonna, which was used in the magic potions of the past, and also for dilating human pupils for cosmetic purposes, is now the source of several widely used drugs, including atropine, scopolamine, and hyoscyamine.

Atropine is used in shock treatment, to dilate eyes and to counteract muscle spasms.

Scopolamine is used as tranquilizer and hyoscyamine has effects similar to those of atropine.

Literally thousands of plants contain varying amounts of poisonous substances. In many instances, the poisons are not present in sufficient quantities to cause adverse effects in humans when only moderate contact or

consumption is involved and cooking may destroy or dissipate the substance. Some plants have substances that produce toxic effects in some organisms but not in others. Ordinary onions (*Allium cepa*), for example, occasionally poison horses or cattle yet are widely used for human food, and poison ivy (*Toxicodendron radicans*) or poison oak (*Toxicodendron diversilobum*) produce dermatitis in some individuals but not in others.

Most drugs are poisons when consumed in large amounts. For example, white snakeroot killed thousands of people in the Midwest during the 1800s. In some areas, such as in Dubois Country, Indiana, the death toll may have been one out of every two people.

For centuries, humans and other animals have used plants for their medicinal properties. Today, natural-products chemists use a combination of laboratory technique and information from folklore and herbal medicine to make compounds with effects similar to those of plant-derived compounds, in the search for new and more effective drugs.

Exercise 1. Fill in each blank with an appropriate word from the list of words given below.

1. Alkaloid narcotics are excellent ...
 2. *Cannabis sativa* is a plant from which tetrahydrocannabinol is derived for making ...
 3. ... , an ingredient of many insecticides, comprises 1%-3% of the weight of tobacco.
 4. More than 3 million Americans use each day ... as a heart stimulant.
 5. There are many ... to the use of drugs of plant origin in the early Greek literature.
 6. ... is a low evergreen shrub which is a source of reserpine.
 7. People with ... disorders are treated successfully with the reserpine.
 8. Term ... indicates a group of plants having important characteristics and passing on their special characteristics.
-
- species, snakeroot, pain-killers, digitoxin, hashish, mental, nicotine, references.

Exercise 2. Make up questions to the emphasized words as in the model:

Model: Plants represent a huge storehouse of drugs.
What represents a huge storehouse of drugs?

1. Today the natural-products chemists traditionally explore the healing power of plants.
2. Drugs of plant origin have been used since time immemorial.
3. Galenos published a detailed list of pharmaceutical drugs

mainly from plants. 4. Reserpine extracted from snakeroot is used as sedative. 5. Digitoxin is taken as a heart stimulant by more than 3 million Americans each day. 6. Today cocaine is marketed illegally in highly addictive form. 7. Tetrahydrocannabinol derived from hemp is used to make hashish. 8. Many insecticides contain nicotine.

Exercise 3. Add the proper ending of the sentences:

1. Natural-products chemists are people who
 - a) produce chemicals of plant origin in the chemical laboratories;
 - b) search for different compounds from plants to use them as medicines;
 - c) prepare the list of drug plants.
2. Alkaloid-derived drugs from *Vinca roseus* have revolutionized treatment of
 - a) mental disorders;
 - b) blood cancer;
 - c) high blood pressure.
3. Reserpine is used
 - a) to increase blood pressure;
 - b) to decrease blood pressure;
 - c) as a stimulant.
4. The first birth control pills were made using
 - a) progesterone;
 - b) testosterone;
 - c) estrogens.
5. Today, cocaine is marketed
 - a) legally;
 - b) illegally;
 - c) as a prescription drug.

Exercise 4. Match the names of plants with their uses in the past.

Caution: Do not use any of the plants listed here for medicinal purposes without consulting a physician.

Plant (scientific name)	Uses
Ephedra (<i>Ephedra</i> spp)	Chickasaw Indians snuffed infusion of roots as a remedy for nose bleeding. Pomo Indians boiled bark in water and apply resulting liquid for relief of skin itches; fresh inner bark contains salicin, an aspirin like compound used to reduce fevers.

Marijuana (Cannabis sativa)	This small, spineless cactus with carrot like roots is the source of mescaline. The Aztecs used dried slices (i.e. buttons) of this hallucinogenic plant for religious purposes, as do Indians in Mexico and the south west of the United States.
Willow (Salix spp)	Tetrahydrocannabinol is obtained from resinous hairs in inflorescences; ancient medicinal drug in China.
Deadly nightshade (Atropa belladonna)	Reserpine is obtained from roots; drug used in treatment of mental illnesses and in counteracting effects of LSD.
Peyote (Lophophora willianissi)	Belladonna, a drug complex extracted from leaves, contains the drugs atropine, hyoscyamine and scopolamine; these are used as an opium antidote in shock treatment, and for dilation of pupils. Scopolamine is also used as a tranquilizer and for "twilight" sleep in childbirth
Rauwolfia (Rauwolfia serpentina)	Drug ephedrine widely used to relieve nasal congestion and low blood pressure, is obtained from stems (most ephedrine now in use is synthetic).

Which of the above mentioned plants are used for medicinal purposes nowadays?

Exercise 5. Answer the following questions:

1. When did people learn to use plants as medicine? 2. Do plants represent a huge storehouse of drugs? 3. What specialists traditionally explored the healing power of plants? 4. When may herbal medical practice have begun? 5. Give examples proving the fact that drugs of plant origin have been used since time immemorial. 6. Have alkaloid-derived drugs helped revolutionize the treatment of some diseases? 7. What is reserpine used for? 8. Which steroids are extracted from yams? 9. What is digitoxin – a heart stimulant extracted from? 10. What have you learned from the text about cocaine? 11. Is cocaine now marketed legally or illegally in highly addictive forms? 12. What is an ingredient of many insecticides? 13. When may most drugs become poisons? 14. What plants contain potent toxins? 15. What reactions may some plants elicit?

Exercise 6. Speak about plants as sources of drugs.

Read text 2 and be ready for a comprehension check up.

TEXT 2

HERBAL MEDICINE

Herbal medicine is one of the most ancient forms of remedial treatment, evolving with humanity, as we learned through trial and error, and by watching animals. Almost every major culture has at one time used herbs as its main or only source of medicine.

As long ago as 3000 B.C. the ancient Egyptians compiled lists of herbs and their properties. Later, the ancient Greeks followed suit. It was the Romans who brought herbs to northern Europe, and their herbalism was nurtured and molded by other cultural influences, including the Arabs, who invaded the Iberian Peninsula.

When the reasons why herbs worked on a medical basis were unclear, a philosophy or didactic myth would be woven* to explain them. Thus, in the Middle Ages there was a belief that each part of the body was governed by one sign of the zodiac, and each herb by one of the known planets. Others believed in the **Doctrine of Signatures**, which held that any herb showing a physical similarity in shape or coloration to the symptoms of a disease could be used to effect a cure for that disease. When based on this ideology, prescribing became a complex business, but this was later simplified slightly by the advent of the printing industry. The practice of herbalism flourished, coexisting alongside developing orthodox medicine for centuries. However, as modern drug-and-surgery-based medicine became more established, the use of herbs became nearly extinct.

Pharmaceutical companies have encouraged the belief that their drugs containing synthesized plant ingredients were somehow more effective than plants themselves. While eagerly examining the enormous potential of medical botany, the pharmaceutical industry actively campaigned against herbalism – trying to find a toxic element in many herbs that would, in suitable quantities, be entirely harmless.

The growing concern about the side effects of drugs has meant that herbalism has been called upon once more to provide natural medicines. In particular, pregnant women, children, people with chronic conditions that have refused to be shifted by conventional medicine, and those with immunosuppressed conditions have had successful and safe treatment without the use of toxic drugs. As research into the active constituents of herbs continues, increasing numbers of ancient treatments and tonics are becoming recognized once more and brought back into widespread use.

In 19th century North America, a form of herbalism currently known as **physicomaterialism** (intended to refer to the study of healing through the use of organic substances) became the basis for **therapeutic herbalism**, as we know it in the United States today. This had strong elements of traditional

Native Americans plant knowledge and rural settlers' folklore remedies. In Europe, herbalism struggled to become reestablished on scientific grounds and remained more closely linked to plants. This form of herbalism is more correctly called "**phytotherapy**". In France today all phytotherapists are qualified physicians, although herbal therapists elsewhere in Europe may have no such qualifications.

The Chinese, Japanese, Indian, and Native (North and South) American cultures all have traditional systems of herbal medicine. In China and Japan the use of herbal remedies is officially promoted by a government ministry and included in national health systems. In India, herbalism is part of the ancient but still widely used system of Ayurvedic medicine. Native Americans use herbs in a spiritual sense, placing emphasis on their purifying and cleansing properties, both physically and mentally. Among the varied approaches to medical herbalism, there is one important governing principle – that of "**synergism**", which maintains that the strength of the sum of the parts is greater than the strength of individual parts. Therefore, herbalists prefer to use plant parts in their entirety in their remedies, rather than trying to isolate the plant's active constituents chemically (as conventional medicine does). They believe that the combination of each and every element of a plant forms its healing properties, and that each element has specific roles within the body outside the active ingredient itself. The combination of elements also works to prevent harmful side effects.

To gain maximum benefit from herbs, it is important to prepare them correctly. Some methods are listed below.

INFUSIONS. Flowers with their leaves and stalks make the best infusions because they release their active ingredients easily. Measure the required amount of herbs into a warmed chine teapot. Pour boiling water over, and steep (soak) for 10 to 15 minutes before straining. All infusions should be discarded after a few hours.

DECOCTIONS. Woody stems, roots, seeds, and bark are preferred for decoctions. Chop or crush the herb in order to break down the active ingredients. Put the required amount in a non-reactive saucepan and cover with water. Bring to a boil, cover, and simmer for 10 to 15 minutes. Strain, and use while still hot. As with infusions, all decoctions should be discarded after a few hours.

TINCTURES. Tinctures are highly concentrated mixtures of alcoholic spirit and herbs. Put the chopped or ground herb into a container with a lid, and cover with vodka. The ratio of herb to liquid by volume is 1:5. Leave in a warm place for two weeks, shaking twice daily. Strain through a cheesecloth, squeezing well. Store in a well-sealed, dark glass bottle.

COMPRESSES. A compress enables the skin at the site of an inflammation or wound to absorb the active ingredients of a herbal infusion

or decoction. Soak a clean cloth in the heated herbal liquid and apply to the affected area.

POULTICES. A poultice is a compress that contains solid (but soft and mushy) constituents. Wrap the herbs from a hot infusion or decoction in gauze and apply to the skin at the site of an inflammation or wound. Place a hot-water bottle over the top in order to maintain the heat within the compress.

Note:

* would be woven - обычно сочинялись.

Exercise 1. Define the following notions as in the model:

Model: Tincture is a solution of medicine in alcohol or in a mixture that is chiefly of alcohol.

Synergism, herbalist, herbalism, decoction, compress, infusion, poultice, phytotherapy, herbal therapy

Exercise 2. Distinguish among "herb", "herbal", "herbalist" and "herbalism".

Exercise 3. Answer the following questions:

1. Is herbal medicine one of the most ancient forms of remedial treatment?
2. Could the ancient people explain the reasons why herbs worked on a medical basis?
3. Why did the use of herbs become nearly extinct?
4. Why did the pharmaceutical industry actively campaign against herbalism?
5. When has herbalism been called upon once more?
6. What became the basis for therapeutic herbalism in 19th-century North America?
7. Was herbalism reestablished on scientific grounds in Europe?
8. In what countries is the use of herbal remedies officially promoted by a government ministry and included in national health systems?
9. What is one important governing principle of medical herbalism?
10. Why do herbalists prefer to use plants in their entirety in their remedies?
11. What are the main methods of preparing herbs?

Exercise 4. *Skim through the text, divide it into parts and place each part under one of the following headlines. Rearrange the headlines according to the content of the text.*

1. Some methods of preparing herbs.
2. Official promotion of herbal remedies in China, Japan, India and South and North America.
3. The return of herbalism for successful and safe treatment of some conditions.
4. Reestablishment of herbalism on scientific ground.
5. Synergism as one of the important governing principle of medical herbalism.
6. Preparing and using of different remedies from herbs.
7. Some beliefs of ancient people explaining why herbs worked on a medicinal basis.
8. The extinction of herbalism with the establishment of modern drug and surgery-based medicine.

Exercise 5. *Talk on the milestones of herbal medical practices using the rearranged headlines as an outline.*

Exercise 6. *Describe each given method of preparing and using herbs.*

Exercise 7. *Read and translate the text "Flower remedies" with the help of a dictionary. Find in the text answers to the questions given below.*

FLOWER REMEDIES

Remedies from flowers are subtle "elixirs" that claim to be able to help to rekindle a feeling of mental and emotional, as well as physical, well-being. They claim to bring relief from unsettling moods and emotions such as anxiety, fear and anger and to be able to help people feel calm and content in times of stress. Flowers and tree remedies are so safe and harmless that they are often used as self-treatment.

Though flowers have played a role in healing for centuries, the healing power of flowers was only rediscovered in the West in the 1920-s when it was revived by Dr. Edward Bach. Bach was a Harley Street physician specializing in pathology and bacteriology, with a practical understanding of homeopathy. As a young practitioner he quickly noticed that patients with "physical" complaints often seemed to be suffering from some form of

anxiety or “negative” emotional problem. He came to think that the emotional background was the cause of the illness. Bach decided intuitively upon the plants that would give relief. 38 remedies were developed by Bach during the 1920-s and 1930-s.

Remedies are made by floating freshly picked blooms in bowls of spring water and leaving them in sunlight on a cloudless day. Water is “potentized” by the essence of the flower, which is believed to have entered the liquid. The potentized water then is mixed in fixed proportions with brandy, which acts as preservative, and stored in a dark glass bottle. The remedies are normally taken by dropping a few drops of the essence into a small amount of still mineral water. This mixture is then slowly sipped.

Although there are now many varieties of flower remedies made around the world, most are prepared in this way. Unlike many modern herbal medicine, flower essences do not contain any artificial chemical substances, except for the brandy preservative.

1. What are flower essences used for?
2. Can flower and tree remedies be used as self-treatment?
3. Who was the first in the West to rediscover the healing power of flowers in 1920-s?
4. What causes illness from Dr. Bach’s point of view?
5. How are remedies from flowers prepared?
6. What is the main advantage of natural flower essences over modern herbal medicines?

Exercise 8. Read and translate from Russian into English the information about some herbs.

**Валериана лекарственная
(Valeriana officinalis L)**

Лекарственным сырьем является корневище с корнями валерианы лекарственной – *Rhizomacum Radicibus Valerianae*. Тщательно вымытые в воде и очищенные от мелких корней корневища режут на части и сушат на воздухе. Запах корневища сильный, вкус пряный, сладковато-горьковатый. Сырье содержит эфирное масло, органические кислоты, дубильные вещества, сахара, минеральные соли (особенно соли магния и кальция), жиры, алкалоиды. Отвары и спиртовые настойки из корневищ и корней обладают успокаивающим, расслабляющим мышцы и обезболивающим действием.

Красавка белладонна, белладонна (*Atropa belladonna* L)

Лекарственным сырьем является лист красавки – *Folium Belladonnae* и корень – *Radix Belladonnae*. Сырье почти не имеет запаха, корневище сладковато-горькое, неприятное на вкус. Красавка содержит гисциомин и др. производные кумарина, дубильные вещества, органические кислоты и минеральные соли. Сырье красавки обладает обезболивающим, спазмолитическим действием, уменьшает потливость, стимулирует деятельность сердечной мышцы; оно применяется в виде настоек или экстрактов при гастритах, желчно-каменной (*cholelithiasis*), почечно-каменной (*nephrolithiasis*) болезнях, кишечных колитах. Красавка белладонна относится к сильно действующим лекарствам, поэтому ее препараты можно применять только под контролем врача.

Тимьян ползучий, чабрец (*Thymus serpyllum* L)

Лекарственным сырьем является трава тимьяна – *Herba serpylli*. Сырье имеет естественный цвет, ароматный запах и горьковатый вкус. Тимьян содержит эфирное масло, горькие и дубильные вещества, органические кислоты, флавоноиды, минеральные соли и небольшое количество сапонинов. Тимьян обладает антисептическим, вяжущим, противовоспалительным, возбуждающим, отхаркивающим, спазмолитическим и мочегонным действием. Применяется в виде отвара при заболеваниях дыхательных путей, гриппе, коклюше, бронхиальной астме, нарушениях функции пищеварительного тракта, воспалениях почек и мочевого пузыря, болезнях печени, болях и головокружении. Наружно распаренную траву, завернутую в ткань, прикладывают к больному месту при невралгических и ревматических болях, воспалениях кожи и глаз, к язвам.

Черника обыкновенная (*Vaccinium Myrtillus* L)

Лекарственным сырьем являются плоды черники – *Fructus Myrtilli*, иногда листья – *Folium Myrtilli*. Свежие, крепкие плоды собирают в зрелом состоянии. Сырье содержит дубильные вещества, пектины, органические кислоты, сахара, антоциановые красители, каротиноиды, витамины С и D, в листьях – фенольный гликозид арбутин. Листья обладают антисептическим, жаропонижающим действием. Отвар из листьев применяют при сахарном диабете (*diabetes mellitus*), тошноте, болезнях мочевого пузыря и кожных заболеваниях. Отвары из плодов применяются при болезнях пищевого тракта, вызванных бактериями, дизентерийной палочкой (*dysentery bacillus*) и кишечными глистами. Плоды черники особенно рекомендуются

пожилым людям и тем, кто ведет сидячий образ жизни, поскольку они хорошо регулируют деятельность желудка.

Ландыш майский (Convallaria Majalis L)

Трава ландыша является ценным лекарственным сырьем. Высушенные цветки имеют светло-кремовую окраску, без запаха. Листья обычно сохраняют естественный цвет. Вкус их сначала сладковатый, потом горький, острый. Сырье легко теряет активные вещества. Содержит сердечные гликозиды, сапонины, эфирное масло, органические кислоты. Сырье ландыша оказывает активное действие на сердечную мышцу и применяется в виде отваров и настоек при сердечной недостаточности (heart failure). Настойка и экстракт ландыша – одно из лучших сердечных средств; она быстро действует и не накапливается в организме. Применяется только под контролем врача.

Наперстянка пурпуровая (Digitalis purpurea L)

Лекарственным сырьем является лист наперстянки пурпуровой *Folium digitalis purpureae*. Сырье почти не имеет запаха, обладает очень горьким, немного острым, неприятным вкусом. Листья наперстянки содержат сердечные гликозиды, сапонины, флавоноиды, дубильные вещества, слизь, органические кислоты, минеральные соли. Наперстянка обладает сердечным и мочегонным действием. Это одно из основных лекарств при болезнях сердца: ее применяют в виде отваров, настоек или порошков для лечения хронических заболеваний сердца. Препараты действуют через несколько часов после приема (intake), поэтому не рекомендуется применять при внезапных болях сердца. Это сильнодействующее и накапливающееся в организме лекарство, поэтому применять его нужно строго под контролем врача.

Read Text 3 and be ready for a comprehension check-up.

TEXT 3

OPIUM POPPY

Opium is the dried, powdered sap of the unripe seed pod of *Papaver somniferum*: a poppy plant indigenous to Asia minor. Theophrastus described its medical properties in the third century B.C., but the Sumerians, ca* B.C. 4000, probably perceived its utility. Arab physicians knew of the drug, and Arab traders carried it to the Orient where it was used as a treatment for

dysentery. Paracelsus is credited with repopularizing the drug in western Europe in the early sixteenth century by formulating opium into "laudanum", which is still in use.

The euphoric effects of opium were known as early as 4,000 B.C. and by the 1800-s opium was a common ingredient in medications.

Opium smoking became a major problem in China in the 1600-s. Smoking opium has given way to other forms of use in recent years. The substance is obtained primarily by making small gashes in the green capsules of the poppies. The crude opium appears as a thick, whitish fluid oozing out of the gashes and is scraped off. It contains two groups of drugs. One group contains the narcotic and addicting drugs morphine and codeine, which are best known as pain-killers and cough suppressants.

Opium is grown in and imported mainly from south-east Asia, Afghanistan, Pakistan, Iran, the Middle East, and Mexico. World wide production of opium exceeds 10,000 tons, of which only 400 are used for medicine. India is the largest and only legal producer of opium.

Today, poppies are often grown innocently in gardens for their pretty purple and white blossoms. The seeds of opium poppies contain virtually no opium and widely used in the baking industry as a garnish. They also contain up to 50% edible oils, which are used in the manufacture of margarines and shortenings. Another type of oil obtained from the seeds after the edible oils have been extracted is used in soaps and paints.

All the various alkaloid products of opium are called *opiates*, and they include, aside from opium itself, morphine, heroin, codeine, Dilaudid (a semisynthetic derivative of opium), laudanum (a 10 per cent tincture of opium), and paregoric (a 4 per cent tincture of opium). There are also a number of synthetic narcotics with many of the same effects as heroin, usually called *opioids*, which include Demerol (meperidine), Dolophine (methadone), Percodan, and Darvon. In addition, there are the newer "designer" narcotics, including Fentanyl, whose potency in some cases, is far greater than heroin's.

The correct structure of morphine, named after Morpheus, the Greek god of sleep, was first proposed in 1925 and was confirmed in 1955 via total synthesis.

Morphine, effectively relieves pain and increases an individual's ability to tolerate a painful experience. It also produces a remarkably broad range of other effects including drowsiness, mood changes, respiratory depression, nausea, decreased gastrointestinal motility, and vomiting.

Heroin, a scourge of modern societies, is a derivative of morphine. Five units of morphine produce one of heroin. It is from four to eight times more powerful than morphine as a pain-killer and less than 100 years ago was advertised and marketed in the United States as a cough suppressant.

Introduced in 1898, heroin was heralded as, a non addictive alternative to morphine. Subsequent clinical experience showed it to be highly addictive and preferred by addicts over morphine. It is orally inactive, but is effective when administered intravenously. Although heroin has not been available in the United States for therapeutic use since 1906, it is still used clinically in other countries for its analgesic properties.

Up until the early 1980-s, it was estimated that 75% of American drug addicts used heroin, but its use has since been surpassed by that of cocaine. In spite of being somewhat overshadowed, since the mid-1980, by cocaine, heroin is still the substance the American public points to as an example of a dangerous drug.

The loss to society in terms of its economic, physical, and moral impact is enormous, since addicts frequently commit violent crimes to obtain the funds needed to support their habits which often cost well over \$ 200 per day. The illicit sale of heroin, which is made from morphine, is a 6-billion-dollar industry.

Note:

* ca – circa - приблизительно

Exercise 1. Define what statements do not correspond to the content of the text:

1. Heroin is a derivative of morphine. 2. The only legal producer of opium is China. 3. The seeds of opium poppies contain opium. 4. All members of the Poppy Family produce drugs. 5. Oils obtained from the seeds of opium poppies are used both in the manufacture of margarines and shortenings and in soaps and paints. 6. The euphoric effects of opium were known as early as 4000 B.C. 7. Morphine is 8 times more powerful than heroin. 8. All members of the Poppy Family contain the narcotic and addicting drugs. 9. Opium itself was described by Dioscorides in the first century A.D. 10. The correct structure of morphine was first proposed in the 1930-s.

Exercise 2. Define the following notions as in the model:

Model: Pain-killer is any drug for relieving pain.

- | | |
|-----------------------|--------------|
| 1. Cough suppressant. | 5. Morphine. |
| 2. Narcotic. | 6. Cocaine. |
| 3. Noscapine. | 7. Heroin. |
| 4. Codeine. | |

Exercise 3. Match the name of a narcotic substance with its description:

Opium	It is four to eight times stronger than morphine. Its nicknames are “horse”, “junk”, or “smack”. It can be inhaled, smoked, or injected. It dulls the senses and eases the abusers fears and worries. Abusers usually first take it for the sense of intense euphoria. Later they take it to avoid sickness from withdrawal. Abusers are careless about their health and frequently suffer from poor nutrition. They also get infections by using dirty needles.
Heroin	A weak pain reliever that can be used to check coughing. It is often abused for the euphoria it produces. It is significantly less potent analgesic than morphine. However, the drug is orally effective and is less addictive and associated with less nausea than morphine. A nickname for it is “school boy”. Long-term effects may include constipation and loosing the desire to eat.
Codeine	It ten times stronger than opium. It is one of the strongest painkillers known to medicine. Because it is so addictive, its medical use is limited. Patients who have painful heart attacks or dying of cancer may be given this powerful narcotic to ease their pain. Many persons abuse it for its euphoric effect. They soon become addicted. It can be inhaled, smoked or injected. Some nicknames are “white stuff” and “morf”. It causes physiological and physical dependence. As with other narcotics withdrawal from its addiction is difficult and very painful.
Morphine	It is a narcotic doctors can use to ease pain and diarrhea. Nickname for it is “blue velvet”. It reduces breathing and heart rates. For several hours it causes sleep filled with colorful dreams. Side effects include excess perspiration, constipation, and lowered temperature. It also lowers mental abilities and appetite, causes mental and physical dependence and severe withdrawal symptom.

Exercise 4. Answer the questions, expressing your opinion.

1. Where are members of the Poppy Family mostly distributed?
2. Opium poppies have had a significant impact on societies of both the past and present, haven't they?
3. Where can one find references to both opium and opium poppy?
4. When did opium become a common ingredient in medications?
5. What became a major problem in China in 1600-s?
6. What problem faces now the United States?

7. Was heroin advertised and marketed in the United States as a cough suppressant 100 years ago?
8. What is heroin used for nowadays?
9. The illicit sale of heroin has become a 6-billion dollar industry in the USA, hasn't it?
10. What are side effects of heroin, morphine, codeine, opium?
11. Why do we say that the loss to society in terms of its economic, physical and moral impact is enormous because of drug addiction?

Exercise 5. Divide the text into main parts and define what each part is concerned with.

Exercise 6. Read the text "Drug abuse" and find the answers to the following questions:

1. What term describes a false sense of well-being induced by drugs?
2. Why may people begin abusing drugs?
3. What effects may drug cause?
4. What are common dangers related to a physical dependence on drugs?
5. What are withdrawal symptoms suffered by addicts?
6. Why is drug abuse a problem for society?

DRUG ABUSE

If you interviewed ten different drug abusers, each might give a different reason for starting to use drugs. There is no one single cause, and reasons for abusing drugs. Teen-agers almost always experiment with drugs in groups, usually at the suggestion of a friend or relative. People with personal or family problems are more likely to respond to pressures to turn to drugs. For some people, drugs create a sense of euphoric feeling of great happiness or well-being, other people take drugs to forget reality. Whatever the reason for starting, once people begin abusing drugs, other reasons take over. Drugs cause problems that may make it difficult to quit. As problems become worse, the abuser may depend more and more upon the drug to escape reality. But abusing drugs will never solve personal problems – instead, the drugs themselves become a problem. The human body maintains a delicate chemical balance. Drugs rarely affect one part of the body without affecting others. A drug's **chief effect** is the physical or mental change for which it is taken. A different, unknown, or undesirable reaction to a drug is called a **side effect**. The side effects of a particular drug may vary from person to person.

A common effect of many drugs is the development of tolerance. **Tolerance** occurs when the body develops a resistance to the effects of a drug. This often occurs during regular drug use. As a result, the drug user must take larger doses of the drug to achieve the same effect. Nearly all illegal drugs and some prescription drugs can cause dependence. They can cause **psychological or physical dependence**, or both. Psychological dependence occurs when a person develops a craving for a drug, based on a need to reach euphoria or to escape from problems.

Drug dependence has many related dangers. Some drug addicts starve themselves because eating seems less important than the use of drugs. Many abusers contract hepatitis, AIDS, or other infectious diseases from using dirty needles. Their habit places drug abusers in the power of people who may harm or even kill them. Women who abuse drugs increase their risk of having children with birth defects. Babies born to drug addicts may begin life with painful withdrawal symptoms.

People who stop taking a drug to which they are addicted experience withdrawal. **Withdrawal** symptoms vary from drug to drug. They include nervousness, irritability, and sudden mood changes. Others are nausea, vomiting, sweating, and increased heart rate. Some abusers hallucinate, some have stomach and muscle cramps. Some abusers suffer delirium tremens. Certain cases of withdrawal are severe enough to cause death.

Addiction to drugs causes great mental and physical damage. The pain of withdrawal prevents many addicts from being able to give up their habit. One of the chief dangers of illegal drugs is that they are often mixed and the mixture is not known.

As a result, drug abusers never know how strong the drug really is, so they can never be sure of the dosage. Abusers also do not know exactly which drugs have been mixed together. Each time they purchase drugs, drug abusers are risking an overdose or a dangerous mixture.

Since an abuser's life is dominated by the need to obtain drugs, other concerns such as family, friends, career, and community may no longer count.

The drug abuser's ties with family and society are usually broken and many drug abusers turn to crime to support their habits.

Drug abusers may lie, cheat, steal, or use violence to obtain their drugs.

Exercise 6.

- I.** Read the title of the newspaper article and say what in your opinion its main contents is.
- II.** Read the article and do the tasks below.

STUDY QUESTIONS ECSTASY LINK TO DEPRESSION

London (Reuters) – Ecstasy, the illegal recreational drug blamed by doctors for depression and anxiety, may often only enhance these symptoms rather than cause them, according to a study published recently.

Dutch researchers found that children who suffered from depression were more likely to go on to use the drug when grew up to make them feel better.

The appearance later in life of emotional problems in these people might not therefore be primarily due to their use of ecstasy, but could reflect preexisting conditions.

“Using ecstasy may increase a risk that is already there”, said author Anja Huizink, assistant professor at the Erasmus Medical Centre in Rotterdam.

“Other studies claim that ecstasy leads to depression,” Huizink reported. “Sometimes that is the case. But perhaps it is more the case that individuals who already have an increased risk for depression are more likely to use ecstasy.”

Ecstasy – or methylenedioxymethamphetamine (MDMA) – helps the body relax, reduces inhibitions and increases energy and brings feelings of euphoria.

Introduced in the 1970-s to treat depression, ecstasy is now used by millions of young people around the world, especially clubbers who say it can help them dance all night. United Nations data suggest the use of ecstasy surged by 70 per cent between 1995 and 2000.

But ecstasy has increasingly been linked with health problems such as depression, especially where individuals have made heavy use of the drug over a long time.

The Dutch study of 1,580 individuals over 14 years published online by the British Medical Journal, left open the possibility that ecstasy might cause depression in some cases.

“Perhaps for individuals who did not display symptoms of depression and anxiety in childhood, using a lot of ecstasy may also cause depression. We are not saying that is not the case, but we need more studies,” said Huizink.

She and her colleagues first looked at their sample in 1983, before ecstasy appeared as a recreational drug in the Netherlands. Use of the drug was then assessed 14 years later.

Individuals with signs of anxiety and depression in 1983 showed an increased risk of starting to use ecstasy.

The researchers said other factors not tested in their study could account for the increased tendency to use ecstasy in some individuals. These

included the social environment, novelty seeking and the substance use of parents.

"Focusing on these vulnerable individuals in future studies will increase our insight into the potential harmful effects of MDMA, "they concluded.

III. *What paragraphs should be read to answer the questions:*

1. What do doctors blame ecstasy for?
2. What was ecstasy introduced for in 1970s?
3. Why is ecstasy called now the illegal recreational drug and when did it appear as a drug used by millions of young people around the world?
4. What individuals showed an increased risk of starting to use ecstasy?
5. What factors according to the researchers could be accounted for the increased tendency to use ecstasy?
6. What facts proving potential harmful effects of MDMA need more studies?

IV. *Give some facts to prove that ecstasy might both lead to depression and is used to treat depression.*

Read text 4 and be ready for a comprehension check-up.

TEXT 4

THE MINT FAMILY (LAMIACEAE)

The 3,000 members of the Mint Family are relatively easy to distinguish from those of other families in having stems that are square in cross section, opposite leaves, and bilaterally symmetrical flowers. They also generally produce aromatic oils in the leaves and stems. Included in the family are such well-known plants as rosemary, thyme, basil, lavender, catnip, peppermint, and spearmint.

Mint oils can be distilled in the home with ordinary canning equipment.

Mint oils have been used medicinally and as an antiseptic in different parts of the world. Mohican Indians used catnip tea for colds, and dairy farmers in parts of the Midwestern United States use local mint oils to wash their milking equipment. As a result, mastitis, a common disease of dairy cattle, is seldom encountered in their herds. Horehound¹, a common mint weed of Europe, has become naturalized on other continents and is cultivated

in France. A leaf extract is still used in horehound candy and cough medicines. In England, it is a basic ingredient of horehound beer. Vinegar weed², also known as blue curls, is a common fall-flowering plant of western North America. Native Americans of the area used it in cold remedies, for the relief of toothaches, and in a bath for the treatment of smallpox.

Menthol, the most abundant ingredient of peppermint oil, is widely used today in toothpaste, candies, chewing gum, liqueurs, and cigarettes. The primary American source is the Columbia River basin of Oregon and Washington, where it is grown commercially. Geese are sometimes used in the mint fields to control both insects and weeds, since they do not interfere with the growth of the mint plants themselves.

Ornamental mints include salvias and the popular variegated-leaf coleus³ plants, neither of which has typical mint oils in the foliage. Another relatively odorless mint is chia, whose habitat is confined to the drier areas of western North America. The seeds, which become mucilaginous when wet, were ground into a paste that was placed in the eye to aid in the removal of dirt particles. Spanish Californians made a refreshing drink from ground chia seeds, lemon juice, and sugar. Chia seeds reportedly contain an unidentified substance that has effects similar to those of caffeine. Bard maintained that a tablespoon of chia seeds was sufficient to sustain a man on a 24-hour endurance hike. Since that time, backpackers have experimented with the seeds, and results tend to support the earlier claim. A thorough scientific investigation of the matter is needed.

Notes:

1. horehound – *бот.* шандра
2. weed – дикорастущее растение
3. variegated-leaf coleus – *бот.* колеус с пёстроокрашенными листьями

Exercise 1. Complete the sentences with the appropriate statements using the information from the text.

1. The 3,000 members of the Mint Family are easy to distinguish from those of other families.
 - a) ...
 - b) ...
2. Mint oils have been used medicinally and as an antiseptic.
 - a) ...
 - b) ...
3. Menthol, the ingredient of pepper mint oil is widely used today.
 - a) ...
 - b) ...
4. An odorless mint chia contains substances which have effect similar to those of caffeine.
 - a) ...
 - b) ...

Exercise 2. Answer the following questions:

1. In what parts of plants do members of the mint family produce aromatic oils?
2. Can mint oils be distilled with ordinary canning equipment in the home?
3. Why do dairy farmers in some parts of the USA use local mint oils to wash their milking equipment?
4. What is a common mint weed of Europe?
5. What did Native Americans use vinegar weed for?
6. In what part of the USA is peppermint grown commercially?
7. Do ornamental mints have typical mint oils in the foliage?
8. What ingredients were used by Spanish Californians to make refreshing drinks?
9. What did the physician by the name of Bard maintain before the turn of the 20th century?

Exercise 3. Name some plants of the Mint Family and speak on their usage as medicines in the past.

Exercise 4. Read the example of textual advertisement. Render its main contents in English. Think of your own advertisement of any commercial herbal product.

**Эхинацея пурпурная
(*Echinacea purpurea*)**

Много лет назад эхинацея пурпурная использовалась в нетрадиционной медицине, после чего перешла в народную, а сейчас заняла достойное место и в практической медицине.

Особо популярной стала эхинацея пурпурная в XX веке, после того как в ней были обнаружены антивирусные, антибактериальные, иммуностимулирующие, антиаллергические и противогриппозные свойства.

В последние годы на кафедрах фармацевтических институтов изучаются поистине удивительные свойства эхинацеи пурпурной, в особенности подземной ее части – корневищ с корнями.

Настойка, приготовленная в промышленных условиях по специальной технологии из свежих корневищ с корнями эхинацеи, собранных ранней весной или осенью, как лечебное средство, оказывает наиболее эффективное действие на организм благодаря наличию в ней комплекса биологически активных веществ.

Действие эхинацеи пурпурной на организм человека:

- стимуляция иммунитета;

- использование в комплексном лечении онкологических заболеваний;
- противовоспалительное действие;
- противовирусные свойства;
- профилактика простудных заболеваний;
- профилактика и лечение острых инфекционных заболеваний;
- снятие хронической усталости;
- повышение жизненного тонуса.

Этот лекарственный препарат можно применять взрослым и детям, больным и здоровым, не опасаясь привыкания и аллергических реакций.

Действует препарат как биогенный стимулятор, мобилизуя силы вашего организма на борьбу против вредного воздействия окружающей среды, вызванного техногенными экологическими проблемами нашего времени.

PART IV. Speech Exercises

Exercise 1. Finish the statements adding two or more sentences:

1. With the development of modern techniques of compounding drugs herbalism became reestablished on scientific grounds
2. In some countries herbal medicine is included in national health systems ...
3. To gain maximum effect, it's important to prepare herbs correctly
4. The illicit sale of some dangerous drugs has a great impact on the societies all over the world resulting in
5. Alkaloid products of opium including ... are used as pain-killers

Exercise 2. Agree or disagree with the following statements:

1. The flowers of lily of the valley are the first which appear in spring.
2. Foxglove is a plant with purple and white flowers growing wild in England. It is applied in the treatment of many diseases.
3. Almost every culture has a history of herbalism, each depending on the local flora or vegetation to nourish and to heal.
4. Mint oils have been used medicinally in different parts of the world.
5. Opium poppy is well-known for its euphoric effects, it being a common ingredient in medications.

Exercise 3. Prove that

1. Medicines of plant origin possess greater advantages over synthetic ones and that's why it is necessary to increase the production of drugs of plant origin.
2. As recently as 50 years ago the vast majority of medicines used in the treatment of human diseases and ailments were plant produced.
3. Today much of modern medicine is based upon early herbal practices.
4. Today's natural-products chemists are a modern version of medicinal herbalists who were in the past dealers and collectors of plants.
5. All sorts of helpful and deadly poisons exist in nature.

Exercise 4. Suppose your friend is interested in preparing the tincture of valerian. Make up a dialogue using the following word combinations:

cultivated or wild plant of valerian, to gather in autumn, the greatest number of active constituents, to clean from earth, rhizomes together with roots, to need a thorough washing, to dry on an open air, to cut into pieces, to chop the root, to take dark glass bottle with lid, to cover the chopped root with alcoholic spirit, the ratio of herb to liquid, to leave in a warm place, to shake, to store in a proper place, to be used as, sedative, pain-killer, muscle relaxant.

Exercise 5. Express your opinion with the following ideas, using the phrases:

I'm of the same opinion	I find it extremely interesting
My opinion is that ....	....
It's well-known that	It's absolutely important
I'd like to stress the importance	It's worth doing something
	As I understand it

1. Botanists and others once believed in the so-called Doctrine of signatures, which stated that the shape of a plant part indicated its usefulness in treating a particular ailment. Thus walnuts, which resemble brains were used to treat liver ailments. Some people still believe such claims. How would you test such claims?
2. Scientific investigations often take a great deal of time and money. Is it worth the effort to check out scientifically the past uses of plants?
3. A return to exclusively herbal medicines is being advocated in some quarters. Is this a good idea? What are the pros and cons?
4. People made extensive use of plants for a wide variety of purposes in the past. List such uses for as many plants as possible.

5. Would you expect drugs produced naturally by plants to be more effective or better than drugs produced synthetically? Why?
6. Some people swear by herbal medicines, other swear at them. Who is correct?

Exercise 6. *Comment on the following words of Roman philosopher Pliny the Elder, who wrote in the first century A.D.: "If remedies were sought in the kitchen garden, none of the arts would become cheaper than the art of medicine".*

Exercise 7. *Explore the problem of drug abuse.*

- a) Suppose a group mate of yours told you that he or she was going to try cocaine "just once, to see what it is like". What would you say to this person, explain your answer;
- b) Imagine that you are at the party where older teens are trying to get younger teens to try drugs. The older teens are saying such things as "grass (marijuana) is the thing to do". What might you say or do?
- c) Debate:
 - whether marijuana should be legalized;
 - whether it is worth taking "light" narcotics because of their psychological benefits: they relieve stresses of everyday life, provide constant consolation, make social contacts easier.
- d) Make projects:
 - draw an original cartoon or create a poster that illustrates reasons teenagers begin using drugs;
 - prepare a pamphlet for university-wide distribution that describes different types of drugs, ways that any drug may be misused, the physical and emotional dangers of drug abuse, and the treatment for various types of drug abuse.

Exercise 8. *Work in groups of 4 or 5. You are discussing the problem of drug abuse.*

Discussion group: a pharmacist, a representative of the republic sector working with the drug users, a specialist-narcologist, a member of a governmental organization, a member of a drug quitters club.

Statements:

1. Drug misuse and drug abuse are two ways of using drugs wrongly that can harm the body.
2. Definite links: drug addiction and heart beat irregularities, drowsiness, moodiness, loss of appetite, unbalanced emotions, confusing and

- frightening hallucinations, serious mental disorders, death from overdose.
3. The first step for a drug abuser is recognizing that a problem exists. Recognizing the signs of drug abuse early is very important in helping someone with a drug problem.
 4. People with drug abuse problems can find help in drug treatment centres and hospitals.
 5. Laws against drug abuse are intended not only to protect the public but also to protect drug abusers from themselves and each other.
 6. There are particularly strong laws against selling drugs to minors.
 7. Prevention is the best possible way of handling that problem of drug abuse (training to behave in responsible and safe manner, creation of service for counselling and assistance to young people).
 8. Complete recovery from heavy drug abuse is possible, but very difficult.

Exercise 9. Get ready to speak on the topic "Plants as sources of drugs" according to the following outline:

1. The use of herbs and other traditional methods of healing was very important for ancient people.
2. Some parts of plants or their alkaloids (reserpine, ephedrine, steroids, digitoxin, cocaine, nicotine, opium, marijuana) were widely used for the treatment of wide range of diseases (allergies, arthritis, digestive problems, headaches, high or low blood pressure, insomnia, kidney or urinary infections, menstrual problems, skin diseases).
3. Elements of traditional knowledge and folklore remedies form the basis for therapeutic herbalism practiced nowadays.
4. There are some methods of preparing effective herbal remedies (tinctures, compresses, infusions, poultices, decoctions).
5. Heroin, cocaine, morphine, sedatives, tranquilizers – these widely used drugs were all originally extracted or synthesized, then marketed for medical purposes and then they eventually escape into recreational street usage.

SECTION 6
Topic for reading and discussion
“COMMONLY USED DRUGS”

- Grammar:**
1. Infinitive.
 2. Complex Subject (the Subject Infinitive Construction).

PART I. Structure Recognition
Forms of the Infinitive

Table 1

<i>Tense</i>	<i>Active Voice</i>	<i>Passive Voice</i>
Indefinite Infinitive	to examine	to be examined
Continuous Infinitive	to be examining	-
Perfect Infinitive	to have examined	to have been examined
Perfect Continuous Infinitive	to have been examining	-

Exercise 1. Study the translation patterns of the Infinitive and define its functions:

- | | |
|---|--|
| <p>1. To <u>cure</u> early infection is easier than to cure chronic disease.</p> <p>2. A good local anaesthetic must <u>produce</u> anaesthesia without damaging nerve cells.</p> <p>3. When natural water is <u>to be used</u> for scientific purposes or in preparation of medicines, the traces of salts in solution may produce undesirable results.</p> <p>4. The natural source of vitamins <u>to be given</u> to patients is in food they consume.</p> <p>5. Strophanthus resembles digitalis in its action and in</p> | <p>1. <u>Вылечить</u> раннюю инфекцию легче, чем хроническое заболевание.</p> <p>2. Хороший местный анестетик должен <u>вызывать</u> анестезию, не повреждая нервных клеток.</p> <p>3. Когда натуральную воду необходимо <u>использовать</u> с научной целью или для приготовления лекарств, незначительное количество солей в растворе может привести к нежелательным результатам.</p> <p>4. Природный источник витаминов, <u>которые могут получать</u> больные, содержится в потребляемой ими пище.</p> <p>5. Строфант напоминает дигиталис по своему</p> |
|---|--|

certain cases it is preferable to use it for stimulation of cardiac muscle.

6. To pass exam you need to work effectively. Your object is to learn facts and retain them long enough to pass the exam.
7. Nux vomica seeds are extremely hard and should be boiled in water for at least an hour in order to soften them sufficiently.
8. It took us several hours to arrive at a decision.

действию и в некоторых случаях предпочтительнее использовать его для стимуляции сердечной мышцы.

6. Чтобы сдать экзамен, необходимо работать эффективно. Ваша цель – ознакомиться с фактами и помнить их достаточно долго, чтобы сдать экзамен.
7. Семена ореха рвотного чрезвычайно твердые и их необходимо кипятить в воде, по крайней мере, час, для того, чтобы размягчить их в достаточной степени.
8. Нам потребовалось несколько часов, чтобы принять решение.

Exercise 2. Read out the sentences and define functions of the Infinitive. Translate the sentences:

1. The berries of raspberry have been used to dye linen and cotton cloth a pure pink.
2. Young leaves of dandelion are boiled and eaten like spinach, they can also be made into vegetable soup.
3. The German author Fuchs was the first to describe Foxglove which was collected for the preparation of medicine.
4. Procaine has been given intravenously to relieve the pains of labour.
5. The term bacteriostatic is often used when it is desired to stress the inhibitory property.
6. Chloral hydrate was the first artificial hypnotic to come into general use.
7. The aim of the experiment to be carried out in our laboratory is to examine the crystalline structure of the substance under test.
8. It is possible to prepare final products of a high degree of purity by a simpler procedure of purification.
9. Garlic was first used to treat TB in the early part of the 20th century.

Exercise 3. Translate the sentences where Infinitive is used as an attribute.

1. Penicillin was the first antibiotic to be produced and it still assumes a position of major importance in this field.
2. There exist a number of antibiotic substances to be used in medicine.
3. The antibiotic substances to be discussed are of great importance.
4. A solution of a drug to be reduced in water or alcohol was prepared so that it contained from 5 to 30 mg of the substance per 5 ml.
5. The material to be used as a base for the suppositories has a definite constant effect on their characteristics.
6. The penicillin to be injected intravenously or intramuscularly must be always freshly prepared.
7. The aim of the analysis to be carried out in the laboratory is to test the effectiveness of the drug.
8. The first local anaesthetic to be used was cocaine, the pharmacological action of which was studied in 1879.
9. One of the first antipyretics to be introduced into medicine was phenazone (Antipyrin).

Exercise 4. Transform complex sentences into simple ones with the Infinitive used as an attribute.

Pattern 1: The dose of morphine which should be used by adult persons is 8-16 mg → The dose of morphine to be used by adult persons is 8-16 mg.

1. The drug which can ordinarily be administered by the oral route can also be injected intramuscularly.
2. The course of drug treatment of leukemia is accompanied by X-ray treatment which should be applied externally.
3. Chloramphenicol which will be marketed in capsules (50, 100, 250 mg) is administered for oral use.
4. The method which will give the possibility to evaluate the "general state" of the organism is of great importance.
5. The usual dose of busulfan which should be given in the treatment of leukemia constitutes 6-10 mg per day at weekly intervals.
6. The earliest synthetic organic chemicals which could be used in medicine were ether and chloroform.

Pattern 2: The Russian botanist Tswett was the first who used the chromatographic method → The Russian botanist Tswett was the first to use the chromatographic method.

1. He was the first who applied the invention in this branch of science.
2. The Russian surgeon Pirogov N.I. was the first who used anesthesia at operations.
3. Wintersteiner and Lederer were the firsts who separated the plant carotenoid pigment with the chromatographic technique.
4. Horace Wells became the first person who used nitrous oxide as an anaesthetic in dentistry.
5. Charles Thomas Jackson was the first who discovered diethyl ether's anaesthetic properties in 1841.
6. The German scientist Paul Ehrlich (1854-1915) was the first who developed true antibiotic agent in 1907 – the red dye trypan.
7. The American scientist Samuel Guthrie was the first who discovered chloroform in 1831.
8. Boston dentist William Thomas Morton was the first who used diethyl ether (often just called ether) as an effective general anesthetic.
9. The great 19th century French chemist Louis Pasteur was the first who discovered that garlic had antiseptic properties.

Exercise 5. Choose the proper form of the Infinitive given in brackets:

1. Pavlov was the first (to open, to be opened) a new epoch in physiology.
2. This process enables the anaesthetic (to be inhaled, to inhale) repeatedly.
3. The liquid (to be passed, to pass) through the filter press is first treated with carbon dioxide.
4. The tablets (to be dissolved, to dissolve) slowly in the mouth must be more strongly compressed than other tablets.
5. The daily dosage of vitamin B₁ (to give, to be given) to adults suffering from hypovitaminosis is 0.006-0.012g.
6. The problem (to be discussed, to discuss) concerns clinical aspects of the drug action on a human body.
7. The drug (to test, to be tested) is supplied in significant amounts.
8. The word "salt" means the white substance of specific taste (to be put, to put) in our food.
9. The drug (to use, to be used) in the experiment was examined by specialists.
10. Medicinal uses of yarrow (тысячелистник обыкновенный) involves the fresh leaves, which are used (to place, to be placed) on wounds to stop bleeding and dried leaves in tea (to calm, to be calmed) fevers.

Exercise 6. Insert instead of blanks the following adverbial modifiers:

1. to treat rheumatism and gout; 2. because of its ability to withstand smog;
3. to increase cardiac tone; 4. to prevent moisture from entering the apparatus; 5. to cure serious diseases such as pneumonia; 6. to improve management of pharmacological institutions; 7. to observe antibacterial action of cultures of a *Penicillium* species; 8. to produce unconsciousness and muscular relaxation; 9. to combat tooth decay;

1. Camphor is becoming popular as a street tree in cities and towns located in the milder climatic areas of the United State
2. ..., some pharmacy boards set up central pharmacies in a number of large centers.
3. Beginning in 1945, F⁻ was added to many American drinking supplies
4. Sulphanilamide was the first "wonder" drug
5. Digitalis was administered to the patient ...
6. Several Aloe species produce juices used
7. General anesthetics are employed
8. The Scottish bacteriologist Alexander Fleming was the first
9. Precautions were taken

Subject Infinitive Construction

Exercise 7. Read the following sentences and compare their structure and mode of translation.

It is believed that white or Irish potato originated on an island off the coast of Chile.

White or Irish potato is believed to have originated on an island off the coast of Chile.

Полагают, что белый или ирландский картофель изначально произрастал на острове у берегов Чили.

Subject Infinitive Construction is used with the following verbs as predicates in Passive voice:

to say	- говорить
to report	- докладывать, сообщать
to describe	- описывать
to state	- указывать
to believe	- полагать
to consider	- считать
to expect	- ожидать, полагать

to know	- знать
to show	- показывать, доказывать
to advise	- советовать
to claim	- утверждать
to see	- видеть
to hear	- слышать

The patient is believed to suffer from flu. - *Полагают*, что больной болен гриппом.

Toxemia is known to be blood poisoning caused by toxins. - *Известно*, что токсемия – это отравление крови ядами.

These verbs are used as predicates in Active voice:

to appear, to seem	- казаться (по-видимому)
to prove, to turn out	- оказаться
to happen	- случаться
to chance	- случайно оказаться

The arsenical compound 606, Salvarsan, proved to be effective in treating syphilis. – Соединение мышьяка 606, Салварсан, *оказался* эффективным в лечении сифилиса.

The olive appears to be a native of Palestine. - Родиной оливы, *по-видимому*, является Палестина.

The following expressions can also be used as predicates with Subject Infinitive Construction:

to be likely (liable)	- вероятно(возможно)
to be unlikely	- маловероятно
to be sure, to be certain	- несомненно, наверное, безусловно

Larger doses of Chloral hydrate are likely to paralyze the respiratory centre. – *Вероятнее всего*, хлоральгидрат в больших дозах парализует дыхательный центр.

The task is sure to be fulfilled in time. – Задание, *несомненно*, будет выполнено в надлежащие сроки.

Exercise 8. *Read the sentences paying attention to forms of the Infinitive and mode of their translation:*

They are said <u>to carry</u> out experiments in the laboratory.	Говорят, что они <u>проводят</u> эксперимент в лаборатории.
--	---

Digitalis preparations are known to be mainly used for their action on the cardiac muscle.

They are said to be experimenting now with animal models.

The surgeon is likely to have performed the operation successfully.

Foxglove leaves were stated to have been used externally.

The surgeon is supposed to have been performing operation for an hour already.

Известно, что препараты дигиталиса используются, в основном, для воздействия на сердечную мышцу.

Говорят, что они сейчас экспериментируют с животными.

Вероятно, хирург успешно завершил операцию.

Утверждали, что листья наперстянки использовались наружно.

Полагают, что хирург оперирует уже около часа.

Exercise 9. Find the sentences with the Subject Infinitive Construction and translate them.

1. The roots of dandelion are used to make coffee, a substitute for real coffee; they are gathered in autumn, washed and dried artificially.
2. Larger quantities of chloral hydrate are liable to paralyze the respiratory centre.
3. Traditional Chinese medicine, including herbalism, began to be imported into Japan from about the 5th century A.D.
4. In 1903 it was demonstrated that the addition of adrenaline to a solution of a local anaesthetic greatly prolongs and intensifies its action, and it is now the usual practice to inject adrenalin or one of its substitutes together with a local anaesthetic.
5. In the Middle Ages the roots of valerian were used to perfume linen and clothing.
6. The water distilled from the flowers of Lily- of the- valley was supposed to possess great virtues and was always stored in gold or silver vessels. It was supposed to "strengthen the brain and the heart". It was also said to restore speech to dumb and to perform other miraculous cures.
7. In Bohemia 7-year old children are believed to grow up beautiful if they dance in flax.
8. On account of local anaesthetic properties of phenol, it can be used for itching skin infection, but prolonged local application to the skin, under dressing, has been known to cause gangrene.

9. It is remarkable that vitamin C appears to be non-essential to some animals, such as rats and rabbits, which are not known to suffer from scurvy even in the complete absence of vitamin C.
10. The following herbs are widely believed to act as tonic on the blood: garlic, Echinacea, ginger, chili, black pepper.

Exercise 10. Use the Subject Infinitive Construction in answers according to the Model.

Model: Who is known to have been the first to discover oxygen? (Lavoisier) **Lavoisier is known to have been** the first to discover oxygen and to describe its functions in combustion.

1. Who is known to have been the first to place pharmacology on a scientific basis? (*Paracelsus*).
2. Who is known to have been the first to introduce inoculation against small-pox? (*E. Jenner*).
3. Who is known to have discovered "Salvarsan"? (*P. Ehrlich*).
4. Who is known to have been the first woman in England to found modern nursing service? (*Florence Nightingale*)
5. Who is known to have introduced the periodic table of elements? (*D. Mendeleev*)
6. Who is known to have described one of the forms of infectious jaundice, known as "Botkin's disease"? (*S. Botkin*).
7. Who is known to have been the first to introduce antisepsis in surgery? (*Joseph Lister*)
8. Who is known to have been the greatest of Latin medical writers? (*Celsus*).
9. Who is known to be the inaugurator of anatomy as a science? (*Andreas Vesalius*).
10. Who is known to have been one of the greatest surgeons of the Renaissance? (*Ambroise Pare*).

Exercise 11. Change the sentences using Complex Subject:

Pattern: It is considered that acetaminophen is more toxic than aspirin.
Acetaminophen is considered to be more toxic than aspirin.

1. It is claimed that capsaicin alleviates arthritis and the severe pain of shingles.

2. It *appears* that ibuprofen has more *side* effects than aspirin or acetaminophen.
3. It seems large doses of aspirin slow eye cataract formation for up to ten years.
4. It appeared that an arsenic-containing drug called Salvarsan 606, was effective in curing the sexually transmitted disease syphilis.
5. It's likely that the situation will be further worsened by the expected population growth.
6. They say that a decoction of the fresh yarrow prevents baldness, if the head is frequently washed with it.
7. It was proved that nitrous oxide was fairly dangerous and caused brain damage.
8. It has long been known that quinine, an alkaloid occurring in cinchona, exerts a specific action in malaria.
9. It was found that phenazone had antipyretic properties and was introduced into medicine under the name of Antipyrin.
10. It has been found that p-aminobenzoic acid in relatively small amounts overcomes the antibacterial action of sulphanilamide and its derivatives.

Exercise 12. Answer the following questions using the words in brackets as predicates to form the Complex Subject.

Pattern: - Do patients with histories of hay fever, asthma, urticaria and previous sensitivity to penicillin react to penicillins? (to be likely).
 - Yes, the patients with histories of hay fever, asthma, urticaria and previous sensitivity to penicillin are likely to react to penicillins.

1. Are herbs collected mostly during the period of full flowering? (to know).
2. Does vitamin B₁ effect the coronary blood circulation in many patients suffering from angina pectoris and myocardial infarction? (to be certain).
3. Has it been established experimentally that ginseng preparations have a very low toxicity and possess a wide therapeutic activity? (to turn out).
4. Have studies shown that ascorbic acid inactivates diphtheria and vaccine virus injected into rabbits? (to prove).

5. Do untoward effects including tremor, palpitation *and* insomnia occur after the use of ephedrine in the treatment of asthma? (to observe).
6. Has it been found that many substances, like phenols, possess disinfectant properties without showing any specific action on the microbes? (to be sure).
7. Do antipyretics such as phenacetin, acetanilide and salicylic acid act by an effect on the central heat regulatory mechanism? (to believe).

PART II. Vocabulary Learning

Exercise 1. Read the words of the Latin and Greek origin and try to translate them using your knowledge of the Russian, Latin and English languages.

analgesic [ˌænæl'dʒesɪk], acetylsalicylic acid [ˌæsɪtɪl sæh'sɪlɪk 'æsɪd], aspirin [ˌæspərɪn], arthritis [ɑ:'θraɪtɪs], acetaminophen [ˌæsetæmɪnəfən], anesthetics [ˌænɪs'tetɪk], anesthesia [ˌænɪs'ti:zjə], codeine ['kəʊdeɪn], camphor ['kæmfə], chloroform ['klɔrə'fɔ:m], cataract ['kætərækt], euphoria [ju:'fɔ:riə], halothane ['hæləuðeɪn], lidocaine ['lɪ:'dəʊkeɪn], rheumatism ['ru:mətɪzəm], toxemia [tɔk'si:mɪə], odyssey [ˌɒdɪsi], menthol ['menθəl], anemia [ə'ni:mjə], leucopenia [ˌljʊ:kə'pi:nɪə], leukemia [ljʊ:'ki:mɪə], technique [tek'nɪ:k], epoch [ˈi:pək], teratogen [ˌterə'tɔdʒɪn], diarrhea [ˌdaɪə'riə], dermatitis [ˌdɑ:mə'taɪtɪs], antihistamine [ˌæntɪ'hɪstæmɪn], rhinitis [raɪ'natɪs], sinusitis [sɪnju'saɪtɪs], pyrexia [paɪ'riksɪə], conjunctivitis [kən'dʒʌŋktɪ'vaɪtɪs], opium [ˈəʊpjəm], opiate [əʊpɪət], elixir [ɪ'lɪksə], capsule [ˌkæpsjʊl], ginseng [ˌdʒɪnsɛŋ], malaria [mə'lɛəriə], quinine [kwɪ'nɪ:n], derivative [dɪ'rɪvətɪv], jaundice [ˌdʒɔ:ndɪs], urticaria [ˌɜ:tɪ'kɛəriə], diphtheria [dɪf'θɪəriə], myocardial infarction [ˌmaɪə'kɑ:diəl ɪn'fɑ:kʃn], chlamydia [klɪ'mɪdɪə], gastroenteritis [ˌgæstrəʊ'entərɪtɪs], pneumonia [nju:'mɔnjə], meningitis [ˌmenɪn'dʒaɪtɪs], cystitis [sɪs'taɪtɪs], depressant [dɪ'presənt], hallucinogen [hə'lʊ'seɪnədʒən], analgesia [ˌænæl'dʒɪ:ziə], diphtheria [dɪf'θɪəriə], tetanus [ˌtetənəs], tranquilizer [ˌtræŋkwɪlaɪzə], sedative [ˌsedətɪv], hypnotic [hɪp'nɒtɪk], immunosuppressive [ɪ'mju:nəʊsə'presɪv].

Exercise 2. Read and memorize the words of the active vocabulary.

a) words relating to pharmacy and botany:

arsenic [ˌɑ:snɪk], n	- мышьяк,
a:'senɪk a	- мышьяковый;
mold [mɔ:ld], n	- плесень, плесенный грибок,
v	- покрываться плесенью, плесневеть;

tar [tɑ:], n	- смола, деготь, гудрон.
willow [wɪlɔu], n	- мазать дегтем, смолить;
willow-herb [wɪlɔw'hɜ:b], n	- ива;
	- кипрей узколистный; иван-чай.

b) words relating to treatment and diagnosis:

balm [bɑ:lm], n	- бальзам, болеутоляющее средство;
bleed [bli:d], v	- 1) кровоточить, истекать кровью; 2) проливать кровь; 3) пускать кровь;
bleeding [bli:dɪŋ], n	- 1) кровотечение; 2) кровопускание;
	- 1) обливающийся, истекающий кровью; 2) обескровленный, обессиленный;
decongestant [di:kɒŋdʒestənt], n	- противоотечное средство; или противоастматическое средство;
ingest [ɪn'dʒest], v	- глотать, проглатывать, принимать (лекарство);
opiate [əʊpiət], n	- 1) опиат, наркотик; 2) успокаивающее или снотворное средство;
topical [tɒpɪkəl], a	- местный, имеющий лишь местное или временное значение;
over-the-counter drug (OTC) [ˈoʊvə θəˈkaʊntə]	- лекарство, выдаваемое без рецепта;
paregoric [ˌpærəˈɡɔrɪk], n	- болеутоляющее средство;
pregnancy [ˈpregnənsɪ], n	- беременность;
tolerate [tɒlə'reɪt], v	- переносить (лекарство);
ointment [ˈɔɪntmənt], n	- мазь.

c) names of diseases and ailments:

chicken-pox [ˈtʃɪkɪn pɒks], n	- ветряная оспа, ветрянка;
(common)cold [ˈkɔ:ld], n	- простуда;
to catch (to take) a cold [kætʃ əˈkɔ:ld], v	- простудиться;
flu [flu:], n	- грипп;
heart attack [hɑ:tə'tæk], n	- сердечный приступ;
measles [ˈmi:zls], n.pl	- (употр. как <i>singl.</i>) корь;
rubella [ru:'beɪlə], n	- (корева) краснуха;
stroke [stɹʊk], n	- удар, паралич.

d) words relating to pathologic conditions:

constipate [ˈkɒnstɪpeɪt], v	- вызывать запор;
constipation [ˈkɒnstɪpeɪʃn], n	- запор;

irritation [ɪrɪ'teɪʃn], n	- раздражение, возбуждение;
drowsiness [draʊzɪnəs], n	- сонливость; гиперсомния. сомнолентность;
faint [feɪnt], n	- обморок, потеря сознания;
rash [ræʃ], n	- обморочный, тошнотворный;
stiffness [stɪf'nɪs], n	- сыпь, высыпание, эфлоресценция;
vomiting ['vɒmɪtɪŋ], n	- заложенность носа (при простуде); - рвота.
e) general scientific words:	
caution [ˈkɔːʃən], n	- предосторожность, предостережение, предупреждение;
claim [kleɪm], n	- требование, претензия, утверждение;
v	- 1) требовать; 2) претендовать; 3) утверждать, заявлять;
damage [dæmɪdʒ], n	- 1) вред, повреждение; 2) убыток, ущерб;
v	- 1) повреждать, портить; 2) наносить ущерб, убыток; 3) разг. ушибить, повредить (о частях тела);
due [djuː], a	- должный, надлежащий, обусловленный;
hazard [ˈhæzəd], n	due to ~ благодаря;
v	- 1) шанс; 2) риск, опасность;
lack [læk], n	- 1) рисковать; 2) осмеливаться, отваживаться;
v	- 1) недостаток, нужда; 2) отсутствие;
prefer [prɪ'fɜː], v	- 1) испытывать недостаток, нуждаться, не иметь; 2) не хватать, недоставать;
untoward [ʌn'təʊəd], a	- предпочитать;
rub [rʌb], n	- неблагоприятный;
v	- 1) трение; 2) натирание, растирание; - 1) втирать (мазь) (in).

Exercise 3. Study the following table and do the tasks below.

Several abbreviations are used to indicate the nature of drugs to be administered to patients. Amounts and the route of administration also are specified by various types of abbreviations.

Abbreviations Associated with the Administration of Drugs

Form of Drug		Time Schedules	
Abbreviation	Meaning	Abbreviation	Meaning
caps	capsules	b.i.d.	twice per day
comp	compound	od/qd	every day
elix	elixir	Omn hr	every hour
ext	extract	pc	after meals
fld/ fl	fluid	pr n	when required
ol	oil	q2h	every two hours
pil	pill	q3h	every three hours
sol	solution	q.i.d	four times/day
tr	tincture	qs	as much as required
tab	tablet	sos	once if necessary
ung	ointment	stat	immediately
		t.i.d	3 times/day
Routes or Sites		Amount	
Abbreviation	Meaning	Abbreviation	Meaning
IM	intramuscularly	Gm	gram
IV	intravenously	gr	grain 64,8 mg (Ap.m)
OD	in right eye	gtt	drop
OS	in left eye	mg	milligram
OU	in each eye	m	minimum
p.o(po)	by mouth	mcg/mg	microgram
Sc or subg	subcutaneously	o	pint 0,57 l (B) 0,47 (A)
		oz	ounce 31,1
		ss	one-half
		U	unit

Apothecaries' Units of Measure

Fluid Units	Symbol	Weight Units	Symbol
minim	m	dram 3,89 gr.	
fluid dram 3,55 ml (Br)	fl.	ounce 31,1 gr.	
fluid ounce 28,4 ml	fl.	pound 373,2 gr.	lb
pint 0,57 l	pt. or o.		
quart 1,14 l	qt.		
gallon 4,546 l	gal. or C.		

1. Insert the correct answers to the spaces provided:

1. List five examples of solid forms of drugs. _____, _____, _____, _____, and _____.
2. List five examples of semisolid forms of drugs. _____, _____, _____, _____, and _____.
3. List five examples of liquid forms of drugs. _____, _____, _____, _____, and _____.
4. In the apothecaries' system the smallest unit of weight is the _____.
5. The smallest unit of volume of the apothecaries' system is the _____.

II. Insert the appropriate letter in the space next to the question number.

Forms of Drug Abbreviations

- | | | |
|---------------|--------------|---------------|
| 1. elix _____ | 4. ol _____ | 7. ung _____ |
| 2. tab _____ | 5. tr _____ | 8. fld _____ |
| 3. ext _____ | 6. sol _____ | 9. caps _____ |
| a) extract | d) elixir | g) solution |
| b) tincture | e) tablet | h) fluid |
| c) oil | f) ointment | i) capsule |

Administration Routes/Sites

- | | | |
|-------------------------|-----------------------|--------------------------|
| 10. intravenous _____ | 13. left eye _____ | 16. subcutaneously _____ |
| 11. intramuscular _____ | 14. by mouth _____ | |
| 12. right eye _____ | 15. in each eye _____ | |
| a) IM | d) OD | f) subq |
| b) po | e) OU | g) OS |
| c) IV | | |

Abbreviations for Amounts

- | | | |
|--------------------|---------------|---------------|
| 17. gm or GM _____ | 20. gr _____ | 23. mcg _____ |
| 18. U _____ | 21. mg _____ | 24. o _____ |
| 19. ss _____ | 22. gtt _____ | 25. m _____ |
| | | 26. oz _____ |
| a) grain | e) unit | h) ounce |
| b) drop | f) milligram | i) pint |
| c) microgram | g) one-half | j) minim |
| d) gram | | |

Time Schedules

27. twice per day ___ 31. once if necessary 35. after meals ___
 28. every hour ___ ___ 36. every three hours
 29. every day ___ 32. three times/day ___ ___
 30. immediately ___ 33. as much as required 37. when required ___

 34. four times/day ___

- a) od/qd e) stat i) q.i.d.
 b) t.i.d. f) Sos j) prn
 c) b.i.d. g) q3h k) pc
 d) Omn hr h) qs

Exercise 4. Study the table and fill in the part of the table dealing with brief explanation of some English word elements taking into account Latin and Greek terms.

Word Elements Associated with		
Wr/cf, Term, and Pronunciation	Word Analysis	Brief Explanation
hypnogenic (hip-no-JEN-jik)	(cf) hypn/o=sleep (s) -genic=producing or produced by	producing by sleep
antimycotic (an-ti-mi-KOT-ik)	(p) anti-=against (cf) myc/o=fungus (s)-fic =pertaining to	
pharmacotherapy (far-ma-ko-THER-a-pe)	(cf) pharmacy/o=drug (s)-therapy= treatment	
pyretic (pi-RET-ik)	(wr) pyre= fever (s)-tic= pertaining to	
toxicologist (toks-i-KOL-o-jist)	(cf) toxic/o=poison (s)-log(y)=study of (s) -ist = specialist	
bacteriocidal (bak-ter-i-o-SI-dal)	(cf) bacteri/o=bacteria (s)-cidal=pertaining to killing	
Bacteriostatic (bak-te-re-o-STAT-ik)	(cf) bacteri/o =bacteria (s)-static=stopping, inhibiting	

Exercise 5. Translate into Russian the words of the same group:

быть толерантным	- tolerance, tolerant, tolerable, toleration;
недостаток	- lack of balance, lack of knowledge, lack of space, lacking;
рисковать	- hazardous, hazard, alcohol is a health hazard;
предпочитать	- preferable, preferably, preference, preferential;
предостерегать	- caution!, cautionary, cautious, caution board;
вред	- damageable, damaged, damaging;
втирать (мазь)	- rubber, rubberized, rubber plant (tree), rubbing;
кровоточить	- bleeder, bleeding, my heart bleeds;
рвота	- to vomit, vomitive, vomitary.

Exercise 6. Match the verbs in A with the words and word combinations in B:

A

1. to relieve
2. to reduce
3. to cause
4. to produce
5. to suffer from
6. to prevent
7. to catch
8. to manage
9. to undergo

B

1. treatment
2. surgery
3. stomach irritation (problems)
4. side effects
5. flu
6. chicken-pox
7. tox(a)emia
8. excessive bleeding
9. pain
10. inflammation
11. a cold
12. fever
13. nausea
14. allergy symptoms
15. poisoning in children
16. heart attack
17. drowsiness

Exercise 7. Match the nouns with the correct definitions:

1. a drug which is safe enough to be taken without a written order from a doctor;
2. a common sickness that causes running of nose, sore throat, sneezing and sometimes chills and fever;
3. the act or fact of breaking out with many small red spots on the skin;

4. an acute contagious disease, caused by a virus, and like a very bad cold in its symptoms, but much more dangerous and exhausting;
5. soon to have a child;
6. a mild contagious disease of children accompanied by a rash on the skin;
7. anything which is for the good of a person or thing;
8. an attack of paralysis caused by injury to the brain when a blood vessel breaks or becomes obstructed;
9. to declare as a fact.

stroke, chicken-pox, claim, cold, benefit, pregnant, over-the-counter drug, influenza, rash.

Exercise 8. *Read and translate the following word combinations:*

Because of a slightly burning taste, to become available over the counter, to store out of the reach of children, to avert vision loss, all-purpose medicine, body maintenance, an excessive bleeding, an arsenic-containing drug, Ehrlich's pioneering research, a chance discovery, pine tar extract, to render the person unconscious, to deaden pain, to reduce (eliminate) pain, to bypass the stomach irritation problem, to suffer from flu (chicken-pox), to consume an overdose, to reduce the incidence of a certain type of stroke, to relieve the joint pain of arthritis and rheumatism, kidney and liver damage, to alleviate arthritis pain and severe pain of shingles, to manage pain, to become drowsy, to become constipated, to relieve symptoms of a common cold, to exercise caution, to administer medicines.

Exercise 9. *Insert instead of blanks the words of the active vocabulary:*

1. A number of aromatic substances, such as certain balsams and ... have long been employed for the prevention of sepsis in wounds.
2. Antipyretics are also used for the relief of certain kinds of pain, for in addition to their antipyretic effect such drugs nearly always act as ... , i. e. pain relievers.
3. They found, however, a greater ... of systemic reactions – perspiration, nervousness, tremor and fainting – associated rather with the use of procaine borate than with the hydrochloride.
4. Barbiturates are used with ... precautions because of their toxic effects.
5. Aluminium hydroxide tends to cause ... if used in excess.
6. Cover the ... surface of the wound with a sterile towel soaked with thrombin.
7. Warn the patient that on taking this preparation dizziness and skin ... are possible.
8. With newer therapeutic methods and modern rehabilitation ... need no longer be considered as hopeless and helpless condition.

9. If you are ill and ... doesn't help you, you may need a stronger medicine. Call a doctor.

Analgesics, due, strokes, bleeding, tars, an over-the-counter drug, rash, constipation, incidence.

Exercise 10. Translate into English:

купировать боль; вызывать тошноту; остановить кровотечение; избежать воспаления легких; простудиться; заболеть гриппом; наносить вред; покупать лекарство, выдаваемые без рецепта; вызывать побочные явления; снизить частоту сердечных приступов; предотвратить потерю зрения; втирать лекарство в ...; принимать лекарство местно; принимать лекарство во время еды; переносить лекарство хорошо (плохо); симптом отмены; назначение лекарств; неблагоприятное воздействие.

Exercise 11. Test yourself whether you remember the translation pattern of the construction (numeral+) as adjective or adverb as (+ numeral):

thousand times as effective at relieving pain as morphine; as few as 50 extra-strength tablets (taken in one dose); only 10 percent as effective as morphine; a quantity of adrenaline as well as 0,002 mg per kilogram of body weight; ...was known as early as 4.000 B.C.; ... is observed as early as 7 minutes after administration and for as long as 4-5 hours.

Exercise 12. Make up questions to the emphasized words:

1. I'm sensitive to novocaine.
2. The drug has done me good.
3. Take the drug a teaspoonful (tablespoonful) twice (three times) a day before (after) meals.
4. You should take these tablets one every three (four) hours.
5. Keep the drug in a cool place protected from light.
6. This drug has antipyretic effect.
7. This drug is of limited value here.

Exercise 13. Translate from Russian into English.

1. У вас есть это лекарство?
2. У вас есть заменитель этого лекарства?
3. Можно ли купить это болеутоляющее лекарство без рецепта?
4. У вас это лекарство в таблетках или в порошках?
5. Как нужно принимать это лекарство?
- натощак;

- после еды;
- перед едой;
- 6. Сколько раз в день нужно принимать это лекарство?
- 7. Дайте, пожалуйста, какое-нибудь снотворное (что-нибудь болеутоляющее).
- 8. Препарат выпускается в виде порошка (таблеток, микстуры).
- 9. Принимайте эти таблетки по одной каждые три (четыре) часа.
- 10. Это лекарство помогает от головной боли (от простуды, при кашле).
- 11. Как долго придется мне принимать это лекарство, доктор?
- 12. Я сделаю вам инъекцию морфия, чтобы вы могли заснуть.
- 13. Вам необходимо сделать инъекцию пенициллина.
- 14. Я принимаю какое-то лекарство, но оно мало помогает.
- 15. Лекарство не подействовало.
- 16. Лекарство может оказать неблагоприятное воздействие (вызвать сыпь, сонливость, запор).
- 17. Никакие лекарства ей, кажется, не помогают.

PART III. Reading Comprehension

Read the article "Drug" from "Medical Encyclopaedia" and answer the following questions:

1. What is the classification of drugs given in the article based upon?
2. What are the main classes of drugs according to their effect on the body?

DRUG

Drug is a chemical substance used to treat or prevent diseases. Drugs can, however, also cause harm if used improperly.

Classified according to their effect on the body, drugs can be placed in about a dozen categories. Categories of particular importance include the following: (1) drugs that kill or impede the growth of bacteria and thus cure or prevent infectious diseases; (2) drugs that affect the heart and blood vessels; (3) drugs that affect the nervous system.

Drugs used for infectious diseases include antibiotics, such as penicillin and sulphonamide (sulfa drugs). Physicians often prescribe these drugs to treat pneumonia, meningitis, or cystitis.

Drugs that prevent infectious diseases include vaccines and antiserums and immunoglobulins. Vaccines stimulate the body's immune system to make antibodies to specific diseases, such as cholera, diphtheria, measles, smallpox, and polio. These antibodies will combine with specific antigens of

the bacteria or virus to render the organism harmless. Antiserums and immunoglobulins are similar to vaccines, except that they already contain the antibodies necessary to neutralize the antigens of such infectious diseases as diphtheria, tetanus, hepatitis, and rabies.

Drugs that affect the heart and blood vessels are referred to as cardiovascular drugs. These include antiarrhythmics to normalize an irregular heartbeat, cardiotonics to strengthen the pumping capacity of the heart, vasodilators to enlarge small blood vessels, and antihypertensives to treat high blood pressure.

Drugs that affect the nervous system include analgesics, anaesthetics, hallucinogens, stimulants, and depressants. Analgesics relieve pain and can be either narcotics (analgesia plus sedation or drowsiness) or non-narcotics. Examples of narcotics include codeine, heroin, and morphine. One of the most widely used non-narcotic analgesics is aspirin.

General anaesthetics eliminate sensation by producing a state of unconsciousness and are often used during surgical operations. Halothane and thiopental are examples.

Hallucinogens, often called psychedelic drugs, cause a person to hallucinate or experience something that exists only in the mind. Hallucinogens include LSD (lysergic acid diethylamide), marijuana, and mescaline.

Stimulants increase the activity of the nervous system, thus diminishing the perception of fatigue or tiredness. They include caffeine, cocaine, and amphetamines. Stimulants are seldom prescribed by doctors because they can cause drug dependency.

Depressants depress the nervous system and diminish tension and worry. Tranquilizers (antianxiety agents), sedatives, hypnotics, and alcohol are all depressants. Benzodiazepines are the most commonly used antianxiety agents. Barbiturates are also used as sedatives and include Phenobarbital, pentobarbital, and secobarbital. Other nonbarbiturate sedatives include chloral hydrate and paraldehyde. Like stimulants, depressants can become addictive.

Other drugs besides those discussed above include diuretics, which increase the formation of urine; hormones, which control certain body functions; vitamins, which are necessary for maintaining health; antitumor (antineoplastic) drugs, which destroy cancer cells; and immunosuppressive drugs, which help prevent the body from rejecting a transplanted organ.

Exercise 1. Match the name of the drug in a) with an appropriate drug term in b)

- a) 1. morphine; 2. acetylsalicylic acid; 3. caffeine; 4. amphetamine; 5. diethyl ether; 6. heroin; 7. novocaine.

b) 1. stimulant: 2. anesthetic: 3. narcotic: 4. analgesic.

Exercise 2. Give the meaning of the following terms which describe drugs affecting the central nervous system.

1. depressants: 2. stimulants: 3. analgesics: 4. anesthetics: 5. anticonvulsants: 6. hypnotics: 7. antipyretics: 8. narcotics: 9. sedatives: 10. barbiturates: 11. tranquilizers (for reference see Glossary).

Exercise 3. Complete the chart of classes of drugs:

Classes of drugs (categories of particular importance)			
Drugs that <u>cure</u> or <u>prevent</u> <u>infections</u> <u>diseases</u>		Drugs that <u>affect</u> the <u>heart</u> and <u>blood vessels</u>	Drugs that <u>affect</u> the <u>nervous</u> <u>system</u>
antibiotics	vaccines		
sulfa drugs	antiserums		
	immunoglobulins		

Read and translate the following text.

TEXT 1

ANALGESICS - WHEN YOU DON'T HAVE TIME FOR THE PAIN

Throughout most of history, pain has been a constant of human life. Pain has one survival advantage – it warns that something is wrong. Nonetheless, humans have long sought ways to reduce or eliminate pain. Chemists still have not attained the pinnacle of achievement in this quest.

This odyssey began thousands of years ago. From antiquity, people knew that alcohol and opium could reduce pain. In the fifth century B.C., **Hippocrates** recommended willow bark for pain relief, and centuries later – about 1763 – English clergyman **Edward Stone** observed that a willow bark extract could reduce fever. But it wasn't until almost a hundred years later that the true beginnings of pain **chemotherapy** (the chemical treatment of disease) came with the isolation of salicylic acid from willow bark in 1860. As Hippocrates and Stone had claimed, salicylic acid not only reduced fever, making it an **antipyretic**, it also relieved pain and thus was an

analgesic. Unfortunately, salicylic acid has a very sour taste and causes stomach irritation.

In 1875, chemists found that the sodium salt of salicylic acid tasted less bitter but still caused stomach problems. They continued to experiment with salicylic acid derivatives, and in 1886, they introduced another chemical, salol, a phenyl ester. Salol was somewhat of an improvement because it did not hydrolyze into salicylic acid and phenol until it reached the intestines, which meant it bypassed the stomach irritation problem. But by about 1900, doctors no longer recommended salol as a general analgesic because an overdose could produce phenol poisoning. Today, salol still finds limited use.

At the same time sodium salicylate and salol became available as analgesics, **Charles-Frederick Gerhard** (1816-1856) was experimenting with what was to become the most important analgesic – **acetylsalicylic acid**. This compound, first synthesized in 1853, was marketed in 1899 as aspirin. Aspirin is now the most commonly used analgesic with an annual U.S. usage exceeding 43,000,000,000 tablets (179 per person). Acetylsalicylic acid is both antipyretic and analgesic. It provides these benefits without drowsiness, euphoria, or other side effects common to some analgesics.

This does not mean aspirin is the perfect analgesic. It still causes stomach irritation in some users and rashes or other allergy symptoms in others. Aspirin is also dangerous for children suffering from flu or chicken pox because it is associated with the occurrence of a potentially fatal disease called Reye's syndrome. Furthermore, it must be stored out of the reach of children who might consume an overdose. Aspirin is the number one cause of poisoning in children.

Nevertheless, the utility of aspirin grows with each passing year. Doctors now know that aspirin reduces the risk of a first heart attack by about 47 percent; it also seems effective in reducing the incidence of certain types of stroke. It is definitely useful for relieving the joint pain of arthritis and rheumatism. Aspirin cannot cure a cold, but it does relieve the fever and pain caused by a cold. Large doses of aspirin even seem to slow eye cataract formation for up to ten years. Aspirin can prevent toxemia in pregnancy and avert vision loss in some people with diabetes. What was once an outstanding pain killer now seems to be an all-purpose medicine.

Can another chemical challenge such a wonder drug? The answer is yes. Aspirin works by reducing the body's prostaglandin levels. But prostaglandins play an important role in healing and body maintenance. In fact, prostaglandins cause the pain associated with fever, swelling, and menstruation. Since aspirin reduces prostaglandin levels, it reduces pain. However, too much pain relief is not a good idea; if prostaglandin levels are too low, we can develop an ulcer or suffer from excessive bleeding. Other drugs can offer pain relief without these dangers, though they have their own side effects.

Exercise 1. Find English equivalents for the following words and phrases in the text.

С древних времен люди знали ...; экстракт коры ивы; вызывать раздражение желудка; находить ограниченное использование; поставлять лекарство на рынок; как ... так и; для детей, болеющих гриппом или ветряной оспой; хранить в недоступном для детей месте; смертельная болезнь; снизить риск сердечного приступа; снизить частоту инсультов; задержать процесс образования катаракты; предотвращать потерю зрения.

Exercise 2. Find in the text sentences with Infinitive or Subject Infinitive Construction. Define the functions of the infinitive and translate the sentences into Russian.

Exercise 3. Define the following: chemotherapy, antipyretic, analgesic, allergy.

Exercise 4. Answer the following questions:

1. What did ancient people use to reduce pain?
2. What was willow bark extract recommended for?
3. When did the chemical treatment of diseases begin? What is an analgesic?
4. What does antipyretic do?
5. Why is salicylic acid considered to be both antipyretic and analgesic?
6. Why did chemists experiment with salicylic acid derivatives?
7. What chemical was introduced later as a general analgesic? Why did it find limited use?
8. Who was experimenting with the most important analgesic – acetylsalicylic acid and what was the result of the experimental work?
9. Is it true to say that aspirin is the perfect analgesic?
10. Does aspirin seem to be all-purpose medicine?
11. Why does the utility of aspirin grow with each passing year?
12. How does aspirin work?

Exercise 5. Arrange the following sentences logically as they appear in the text.

1. Aspirin seems effective for relieving the joint pain of arthritis and rheumatism, it can also prevent toxemia in pregnancy and avert vision loss in some people with diabetes.

2. Charles-Frederick Gerhard was experimenting with acetylsalicylic acid which was first synthesized in 1853 and was marketed in 1899 as aspirin.
3. Hippocrates and Stone claimed that salicylic acid could not only reduce fever but relieve pain as well.
4. Aspirin isn't considered to be the perfect analgesic as it causes stomach irritation, rashes and allergy symptoms.
5. Humans have long sought ways to reduce or eliminate pain.
6. By about 1900, doctors no longer recommended salol as general analgesic because an overdose could produce phenol poisoning.
7. From antiquity people knew that alcohol and opium could reduce pain.
8. Doctors now know that aspirin reduces the risk of a first heart attack and the incidence of certain types of stroke.
9. In 1960 chemists isolated salicylic acid from willow bark.
10. Aspirin being both antipyretic and analgesic is now the most commonly used analgesic.
11. Salol was introduced as a general analgesic in 1886.

Exercise 6. Speak about first agents used as analgesics. Use the following as an outline.

1. Agents which ancient people used to reduce or eliminate pain.
2. True beginning of pain chemotherapy which began with isolation of salicylic acid.
3. Sodium salicylate and salol became available as analgesics.
4. Aspirin as an all-purpose medicine.
5. Disadvantages of acetylsalicylic acid.

Exercise 7. Before reading Text 2 make sure that you know the meaning of the following notions. Match them with their definition.

- | | |
|-----------------------------|--|
| 1. Drug abuse; | 6. Withdrawal; |
| 2. Drug misuse; | 7. Tolerance; |
| 3. Addiction; | 8. Reyes's syndrome; |
| 4. Physical addiction; | 9. Interaction; |
| 5. Psychological addiction; | 10. Route of administration of a drug. |

- a) an addiction when the mind sends the body the message that it needs more of a drug;
- b) how a drug is introduced into the body;
- c) a series of painful physical and mental symptoms;
- d) using a drug in a way other than how it is supposed to be used;
- e) a physical or mental need for a drug or other substance;

- f) using substances that are against law or not supposed to be taken into the human body;
- g) a rare and often fatal disease of the brain, occurring among very young children usually after a common viral infection and associated with administration of aspirin to treat the initial infection;
- h) a type of addiction when the body itself feels a direct need for a drug;
- i) the power of enduring or resisting the action of a drug, poison, or other, usually harmful substances;
- j) action upon or influence on each other.

10b. 9f. 8g. 7i. 6c. 5a. 4h. 3e. 2d. 1f. Key

Read text 2 and be ready for a comprehension check-up.

TEXT 2

ANALGESIC ALTERNATIVES

1. Alternatives to aspirin include acetaminophen, ibuprofen, and naproxen. Among these, the most popular is **acetaminophen**, a derivative of acetanilide marketed under the trade name Tylenol. Gerhardt discovered acetaminophen in 1852, one year before he discovered aspirin. Acetaminophen reduces pain and fever about as well as aspirin, but it does not reduce the inflammation caused by arthritis and rheumatism. Acetaminophen is more expensive than aspirin and is considerably more toxic.
2. Excessive use of acetaminophen has been linked to kidney and liver damage. As few as 50 extra-strength tablets (taken in one dose) can cause death from liver failure. Acetaminophen is sold under such names as Tylenol, Anacin-3, and Datril and is also available in generic versions. It is considered safe for relieving pain and fever in children because it does not cause Reyes's syndrome.
3. Another acetanilide derivative, **phenacetin**, was once used for the relief of premenstrual pain; this was discontinued because phenacetin causes liver damage and is believed to be carcinogen. Acetanilide's use as an analgesic also ceased because of its slightly burning taste, water solubility, and toxicity.
4. **Ibuprofen**, a third pain reliever, became available over the counter in 1984. After many years as a prescription drug, it is now sold under the brand name Advil, Nuprin, and Motrin, and as a generic drug. Ibuprofen

is not a salicylic acid derivative, but it behaves similarly and causes comparable allergic reactions in people sensitive to aspirin. Also like aspirin, ibuprofen relieves inflammation due to arthritis and rheumatism; it even relieves inflammation from gout (for which aspirin is ineffective) and is also effective in providing menstrual pain relief. Ibuprofen seems to have more side effects than aspirin or acetaminophen.

5. A fourth over-the-counter analgesic, **naproxen** was approved by the FDA in early 1994. Naproxen is anti-inflammatory as well as analgesic and antipyretic sold under the trade name Aleve. Methyl salicylate (oil of wintergreen) is the most common topical analgesic. It is used in rubbing creams and balms but is not ingested. This compound has a slightly different structure than aspirin, but it has similar analgesic properties. A related chemical, the triethanolamine ester of salicylic acid, does not have the strong odor of the methyl ester and is a popular topical analgesic. One recently developed topical analgesic comes from a hot pepper extract called capsaicin. This product is marketed as Satogesic, Axsain, and other brand names. Capsaicin is claimed to alleviate arthritis pain and the severe pain of shingles.
6. More potent analgesics are available by prescription, but most are addictive. **Morphine**, a very effective (and addictive) pain killer, is used to relieve severe pain, as a patient with terminal cancer might experience. A standard therapeutic dose is 10-15 mg, usually administered subcutaneously. Analgesia peak is about one hour and lasts for four to five hours. Morphine can also be administered orally, but it is only one sixth as potent. When delivered intravenously, morphine induced respiratory depression which is observed at below analgesic dose levels, as early as seven minutes after administration and for as long as 4-5 hours. An important feature of morphine and related drugs is the development of physical dependence on, and tolerance to, some of the effects. Increasingly large doses of drug must be administered to maintain the analgesic effects and the possibility of psychological dependence is a primary limitation to clinical use. However there are studies which suggest that when patients take morphine to combat pain, it is rare to see addiction, and thus morphine usage may be reasonable for the treatment of chronic pain. The cessation of drug uptake does produce withdrawal symptoms such as diarrhea, vomiting, chills, fever, abdominal cramps, and abdominal pain, which are different from those observed during withdrawal from other CNS depressants. The onset and duration of symptoms depend upon the pharmacokinetic profile of the drug.
7. **Codeine** is a significantly less potent analgesic than morphine. However, codeine is orally effective, and it is less addictive and associated with less nausea than morphine. Codeine is used as an anti-

tussive agent, although newer, non-addictive agents are preferred. Codeine is only 10 percent as effective as morphine, but it can be taken orally; morphine requires injection. **Meperedine** or **Demerol** is another powerful, addictive analgesic. **Methadone** is an addictive synthetic narcotic used to treat heroin addiction, but heroin is not used medically to manage pain. In general, these addictive analgesics are more toxic than the over-the-counter drugs.

8. The human body produces its own pain relievers as well. These natural pain relievers, known as **enkephalins**, are small polypeptides made in the brain. Some enkephalins are a thousand times as effective at relieving pain as morphine. Chemists have synthesized versions with over a *million* times the analgesic activity of morphine, and with less addictive effect. Whether these synthetic enkephalins will ever become prescription drugs remains to be seen. Because the body quickly hydrolyzes them. The duration of the analgesic effect they provide is short.

Exercise 1. Translate paragraph № 6 using a dictionary.

Exercise 2. Agree or disagree with the following statements.

1. The most popular among alternatives to aspirin is acetaminophen.
2. Acetaminophen is less expensive than aspirin and is considerably less toxic.
3. Aspirin is considered safe for relieving pain and fever in children because it doesn't cause Reyes's syndrome.
4. Acetanilide is ceased because of its slightly burning taste, water solubility, and toxicity.
5. Ibuprofen is a third pain reliever being available as an over-the-counter drug.
6. Naproxen is a popular topical analgesic.
7. Methadone is an addictive natural narcotic.
8. Enkephalins have become prescription drugs.

Exercise 3. Find the answers to the following questions in the text.

1. What are the main alternatives to aspirin?
2. What are the main advantages and disadvantages of the most popular analgesic – acetaminophen?
3. When did ibuprofen, a third pain reliever become available over the counter?
4. What are the brand and generic names of ibuprofen?

5. Does ibuprofen behave similarly to aspirin?
6. Naproxen, a fourth over-the-counter analgesic is anti-inflammatory as well as analgesic and antipyretic, isn't it?
7. Name some popular topical analgesics. What are they used for?
8. What kind of chemical is most commonly used as a topical analgesic (for application on the skin)?
9. What potent addictive pain-killers are available by prescription only?
10. In what cases potent analgesics are prescribed?
11. What natural pain relievers which are produced by the human body do you know?
12. Will synthetic enkephalins become prescription drugs?

Exercise 4. Give short characteristics:

- a) of analgesic alternatives: acetaminophen, ibuprofen, naproxen;
- b) of addictive painkillers: morphine, codeine.

Exercise 5. Read the article from the newspaper "The Egyptian Gazette" and do the tasks that follow it.

Morphine nasal spray relieves post-op pain

1. An intranasal form of morphine (Rylomine, Javelin Pharmaceuticals) provides similar pain relief, is easier to administer, and is as safe as intravenous morphine in treating moderate-to-severe pain following surgery, investigators reported this week at the 22nd Annual Meeting of the American Academy of Pain Medicine in San Diego.
2. Rylomine is also less subject to abuse than conventional forms of morphine, presenter Dr Daniel Carr, from Javelin Pharmaceuticals in New York said.
3. The morphine in Rylomine is compounded with an agent that prolongs its contact with the nasal tissue, thus permitting better absorption into the bloodstream, the researcher explained.
4. "By staying longer in contact with the nasal mucosa, it gives blood levels indistinguishable from a 20-minute IV infusion of morphine," he added.
5. Carr and colleagues performed a randomized, double-blind study to evaluate the safety and efficacy of Rylomine on 4-hour total pain relief. Groups of 23 to 46 patients were randomly assigned to varying doses of Rylomine or to IV morphine or placebo.

6. The experimental intranasal form of morphine worked just as well as the IV form, the authors report.
7. Local side effects associated with nasal administration were mild and included bad taste, nasal congestion, nasal discomfort, throat irritation and sneezing. Local adverse events associated with IV administration included burning, itching, and rash at the infusion site.
8. General adverse events related to active drug, regardless of route of administration, were dose related and consistent with morphine's pharmacologic effects, including fainting, dizziness, nausea, and sedation.
9. Carr pointed out that the nasal spray can be easily self-administered, "instead of having a complicated patient-controlled analgesia machine that requires programming – and which can be misprogrammed".
10. He noted that the product they are developing is intended to have a single 7.5-mg dose in a sprayer, with nothing left in the sprayer once the dose is used.

March 5, 2006

Task 1. *What paragraphs should be read in answering the following questions? Give the shortest possible answers to the questions.*

1. What company has recently developed Rylomine?
2. What are the advantages of Rylomine in comparison with IV infusion of morphine?
3. What were the results of a randomized double-blind study of morphine nasal spray?
4. What are local side-effects associated with nasal administration and IV infusion of morphine?
5. What are general adverse reactions related to active drug?

Task 2. *Speak in short about:*

- indications for administration,
- route of administration,
- local and general side effects of morphine nasal spray;
- advantages of morphine nasal spray over IV morphine.

Exercise 6. *Look through the Mediquick Card and do the tasks:*

I. *Answer the following questions:*

1. What vocabulary is the Mediquick characterized by?
2. Is the information about the drug presented in a full or concise form?

3. Is the card issued for the needs of medical practitioners, patients, pharmacy assistants or nurses?

II. *Read and translate the following parts of the Mediquick card:*

- a) contraindications and cautions;
- b) adverse reactions;
- c) interactions;
- d) special considerations.

NAPROXEN, naproxen sodium

Aleve, Anaprox (naproxen sodium); Naprosyn, Naxen*, Novonaprox* (naproxen)

CLASSIFICATION

Pharmacologic: NSAID. **Therapeutic:** non-narcotic analgesic, anti-inflammatory agent.

HOW SUPPLIED

Tablets: 220 mg, 250 mg, 375 mg, 500 mg (naproxen). **Tablets (film-coated):**

275 mg, 550 mg, (naproxen sodium). Note: 275 mg naproxen sodium equals 250 mg naproxen. Capsules: 220 mg. **Oral suspension:** 125 mg/5 ml (naproxen).

PHARMACOKINETICS

Half-life: 13 hours. **Onset:** 1 hour (analgesic); 14 days (anti-inflammatory). **Peak:** 2 to 4 weeks (anti-inflammatory). **Metabolism:** in liver. **Excretion:** metabolite excreted by kidneys (up to 10% unchanged drug excreted in urine).

ACTION

Produce anti-inflammatory, analgesic, and antipyretic effects, possibly by inhibiting prostaglandin synthesis.

INDICATIONS & DOSAGE

Arthritis, primary dysmenorrhea

Adults: 250 to 500 mg P.O. b.i.d. naproxen. Maximum daily dosage 1.5 g naproxen sodium.

Mild to moderate pain, primary dysmenorrhea

Adults: 2 tablets naproxen sodium (275 mg each tablet) P.O. to start, followed by 275 mg q 6 to 8 hours, p.r.n. Maximum daily dosage should not exceed 1,375 mg (naproxen sodium).

CONTRAINDICATIONS & CAUTIONS

- Contraindicated in patients with hypersensitivity to the drug or other NSAIDs or aspirin (possible cross-sensitivity).
- Use cautiously in elderly patients; in those with renal, hepatic or CV disease, GI disorders, or angioedema; and in those with history of peptic ulcer disease.

ADMINISTRATION & MONITORING

- When calculating equivalents, remember that 275 mg of naproxen sodium is equivalent to 250 mg of naproxen free base.
- Monitor CBC and liver and kidney function every 4 to 6 months, or as indicated, during long-term therapy.

ADVERSE REACTIONS

Common: headache, dizziness, epigastric distress, occult blood loss, nausea, pruritus, rash.

Life-threatening: agranulocytosis, peptic ulceration.

Less common: prolonged bleeding time, neutropenia, drowsiness, tinnitus, peripheral edema, dyspnea, visual disturbances, nephrotoxicity, elevated liver enzymes, urticaria.

INTERACTIONS

Alcohol, aspirin, steroids: may increase the risk of adverse GL reactions.

Highly-protein-bound drugs, oral anticoagulants, sulfonlureas: increased risk of toxicity.

Methotrexate: increased risk of toxicity.

Monitor closely.

Probenecid: decreased elimination of naproxen. Monitor for toxicity.

PATIENT TEACNING

- Tell patient that full therapeutic effect may be delayed 2 to 4 weeks.
- Warn patient against taking both naproxen and naproxen sodium at the same time because both circulate in the blood as the naproxen anion.
- Advise patient to have periodic eye examinations during long-term therapy.
- Serious GI toxicity can occur at any time in patients receiving long-term NSAID therapy. Teach signs and symptoms of GI bleeding, and tell patient to report these to the doctor immediately.

- Advise patient to take drug with food or milk to minimize GI upset.
- Advise patient to avoid concomitant alcohol use.

SPECIAL CONSIDERATIONS

- Naproxen and naproxen sodium have also been used to manage pain of vascular headache, osteitis deformans (Paget's disease of the bone), and Barret's syndrome.
- Naproxen may interfere with certain urinary assays of 5-hydroxyindoleacetic acid and may cause false-positive elevations of urinary 17-ketosteroids. Inform clinical laboratory personnel that the patient is taking naproxen.

III. Summarize the information from the card which would be of value for a patient as follows:

1. Leave only those parts which are usually included in the packed inserts (information for patients).
2. Make up special considerations for patients using the corresponding part of the card "patient teaching".

Read text 3 and translate the first 4 paragraphs of it with the help of a dictionary. Do exercises that follow the text.

TEXT 3

ANESTHETIC AGENTS

Pain-killing drugs such as opium, hemp and mandrake were used by the Chinese surgeon Hua To in the second century A.D. and by others even earlier. The drugs were actually only slightly successful in easing pain.

Drastic methods were used by some early surgeons. Assyrian doctors strangled children into temporary unconsciousness before performing circumcision. Others knocked the patient out by striking a wooden bowl on his head.

The term anesthesia comes from the Greek "anaisthai" or insensibility and constitutes a state in which perception of noxious events such as surgical procedures are imperceptible. This state may or may not be accompanied by loss of consciousness.

Like analgesics, **anesthetics** relieve pain, but unlike analgesics, they produce a complete or partial lack of feeling. Modern surgery is almost always performed with the patient under an anesthetic. Anesthetics may be local or general; local anesthetics operate on localized nerve centers, and the person remains conscious; while general anesthetics act on the brain centers

and render the person unconscious. The first example of a chemical anesthetic appears to be Henry Hickman's 1824 use of carbon dioxide as a general anesthetic for an animal.

Nitrous oxide, described by **Priestly** in 1772, was first used to relieve severe dental pain in the latter part of the 18th century. Nitrous oxide was discovered in 1800 by **Humphrey Davy** (English, 1778-1829). Davy suggested its use as a general anesthetic. In 1844, **Horace Wells** (American, 1815-1848) became the first person to use nitrous oxide as an anesthetic, in dentistry. Nitrous oxide is a nonflammable, colorless, odorless, and tasteless gas that can exist as a liquid under pressure at room temperature. It is normally stored in cylinders. However, it supports combustion.

A mixture of 20% nitrous oxide and 80% oxygen produces analgesia equivalent to 15 mg of morphine in humans.

Because of poor solubility in blood and other tissues, induction and recovery from nitrous oxide administration is rapid. Subsequently, nitrous oxide proved to be fairly dangerous and to cause brain damage. Nitrous oxide produces respiratory depression. It has been shown to produce a direct myocardial depressant effect in dogs and in humans breathing a 40% N₂O/60% oxygen mixture. There appear also to be toxic effects. A variety of epidemiologic surveys suggest positive correlations between exposure to nitrous oxide and spontaneous abortion in dental assistants.

Charles Thomas Jackson (American, 1805-1880) first discovered diethyl ether's anesthetic properties in 1841. By 1842, **Crawford Long** (American, 1815-1878) used it to perform surgery; however, Long did not publish his results until 1849. Meanwhile, in 1844, Jackson suggested the use of ether to deaden pain to American dentist William Morton (1819-1868). Morton actually used ether as an anesthetic in 1846. The use of ether soon became widespread. However, ether is extremely flammable – it forms explosive mixtures of air – and it also frequently produces nausea. Because of these hazards, diethyl ether is seldom used in the United States, though it is still widely used in China.

Chloroform (CHCl₃) was discovered in 1831 by **Samuel Guthrie** (American, 1782-1848), but no one used it as an anesthetic until 1846. At that time, **James Simpson** (Scottish, 1811-1870) concluded that chloroform was a better anesthetic than either nitrous oxide or ether and began to use it to relieve the pain of childbirth for his patients. Though chloroform was used as an anesthetic for many years because it is less flammable than ether, doctors now know that CHCl₃ causes liver damage and that the effective anesthetic dose is rather close to the lethal dose.

Cyclopropane (C₃H₆) was used as an anesthetic for a short time, but it forms an even more potent explosive mixture with air than ether does, so its use has been discontinued. The highly flammable gas acetylene (CH≡CH) was also used briefly as an anesthetic in 1924. Some fluorinated compounds,

such as halothane ($C_2HBrClF_3$) or halopropane ($C_3H_3BrF_4$), were tested as anesthetics but appeared to cause miscarriages and other side effects. Modern surgery relies on combinations of chemicals such as **sodium pentothal**, an intravenous anesthetic.

Your dentist might use a local anesthetic, such as **procaine** (Novocain) or **lidocaine** (Xylocaine), when working on a sensitive spot in your mouth. Novocain was first introduced in 1905 by **Albert Einhorn**. Procaine hydrochloride, a relatively weak anesthetic has a long onset and short duration of action. Its primary use is in infiltration anesthesia and differential spinal blocks. The low potency and low systemic toxicity result from rapid hydrolysis. In the old days, before these pain-relieving chemicals were available, patients literally had to "bite the bullet", use alcohol, or take an addictive drug to undergo surgery or dental work. Modern anesthetics, used judiciously, are certainly preferable.

Lidocaine hydrochloride (Xylocaine), is the most versatile local anesthetic agent because of its moderate potency and duration of action, rapid onset, topical activity, and low toxicity. Its main indications are for infiltration, peripheral nerve blocks, extradural anesthesia, and in spinal anesthesia where a duration of 30 to 60 min, is desirable. Because of its vasodilator activity, addition of the vasoconstrictor, epinephrine, increases the duration of action of lidocaine markedly. It is also available in ointment or aerosol preparations for a variety of topical applications.

Exercise 1. Fill in the blanks with the proper words given below.

1. ... operate on localized nerve centers.
2. ... render the person unconscious.
3. Humphrey Davy discovered ... in 1800 and suggested its use as a general anesthetic.
4. W. Morton actually used ... as an anesthetic in 1846.
5. James Simpson began to use ... to relieve the pain of childbirth for his patients.
6. The use of ... was discontinued because it forms an even more potent explosive mixture with air than ether does.
7. Modern surgery relies on combinations of chemicals such as
8. ... was first introduced in 1905 by Albert Einhorn.
9. When working on a sensitive spot in your mouth, your dentist might use a local anesthetic such as ... or

procaine ... lidocaine; nitrous oxide; sodium pentothal; chloroform; novocain; local anesthetics; ether; general anesthetics, cyclopropane.

Exercise 2. Answer the questions:

1. Do anesthetics resemble analgesics or differ from them?
2. What is the difference between local and general anesthetics?
3. What general and local anesthetics can you name? What can you say about their application in medical practice?
4. What are the main advantages and disadvantages of anesthetics listed in the table? Fill in the table to answer the question.

Anesthetic	Advantages	Disadvantages
Nitrous oxide		
Ether		
Chloroform		
Cyclopropane		
Procaine		
Lidocaine		

Exercise 3. Speak about advantages and disadvantages of some anesthetic agents. Keep to the following:

In my opinion ... has (have) some advantages. To begin with, it is ...

Besides also Particularly

However, ... has (have) some disadvantages. The main one is (or; firstly, secondly, etc.).

What is more, As regards In conclusion I would say that

Read the text and trace the development of antibacterial drugs. Translate the first paragraph of the text using a dictionary.

TEXT 4

ANTIBACTERIAL DRUGS

Antibacterial agents either destroy bacteria (**bactericidal**) or prevent bacterial growth (**bacteriostatic**). They work by eliminating enough bacteria than the body's defense network can eradicate the infectious agents. Folk medicine, dating back to antiquity, made use of herbs, garlic, and other natural substances to treat diseases. Antibiotics were used in folk medicine at least as early as 2500 years ago when the Chinese reported the medicinally beneficial effects of moldy bean curd¹. Evidence for some type of tetracycline antibiotic usage by the Sudanese-Nubian civilization (350 A.D.) was reported in 1980. **Paracelsus** (sixteenth century) recommended using mercury compounds and other toxic substances to treat disease, but his

suggestions were not widely adopted, probably because the chemicals were too dangerous. In the mid-1800-s, people knew that elemental iodine killed bacteria; however, too much iodine is harmful to most body tissues. One of the first modern scientific demonstrations was the observation by **Louis Pasteur** in 1877 that common bacteria inhibited the growth of a pure anthrax culture².

Paul Ehrlich (German, 1854-1915) developed the first true antibiotic agent in 1907; it was the red dye trypan³, and he used it to treat African "sleeping sickness". In 1909 Ehrlich developed an arsenic-containing drug called Salvarsan 606 that seemed to cure the sexually transmitted disease syphilis.

Salvarsan 606 is highly toxic ($LD_{100} = 140\text{mg/kg}$ i.v. in rats, meaning that 100 percent of the animals die at this dose), but it was the drug of choice to treat syphilis for many years because there was nothing better. Ehrlich won the Nobel Prize in medicine in 1908 and is considered the founder of chemotherapy, the use of chemicals to treat disease.

The next major attack in the battle against bacteria did not occur until the 1930-s. This is surprising, considering Ehrlich's pioneering research and the fact that the penicillin family was discovered in 1929. **Sulfanilamide**, the prototype **sulfa drug**, was first synthesized in 1908, but its drug potential was not discovered for many years. By the end of World War II, several other sulfa drugs had been developed.

The story of **penicillin** is interesting. In 1928, **Alexander Fleming** (Scottish, 1881-1955) discovered penicillin when a germ culture accidentally became moldy. Before he tossed away the errant experiment⁴, Fleming noticed that there was a circular area with no bacterial growth around each mold spore. Fleming pursued his chance discovery and published a report on the bactericidal activity of the penicillin molds. He noted that the penicillin killed some bacteria and not others, and that it did not harm white blood cells. It is interesting to note that **John Tyndall** (Irish, 1820-1893) had also seen the same lack of bacterial growth around mold spores in the mid-1860-s, but Tyndall did not pursue this observation.

Fleming never isolated the active agent in penicillin; **Howard Florey** (Australian, 1898-1968) and **Ernst Chain** (German, 1906-1979) picked up Fleming's unfinished work in 1939 and completed that task. Both men were seeking new antibacterial agents to use on wounds inflicted during World War II, and they settled on penicillin in 1940. Florey and Chain found they could isolate and manufacture the active mold ingredient by growing the mold in large tanks. The Fleming, Florey, and Chain trio won the Nobel Prize for this work in 1945. Penicillin has saved thousands of lives and is still one of the most widely used antibiotics.

Penicillin's structure was determined in 1949 by **Dorothy Hodgkin** (English 1910). Hodgkin later won the 1964 Nobel Prize for her 1956

delineation of the structure of Vitamin B₁₂. The penicillin molecule contained structural features chemists could not synthesize at that time, but new synthetic techniques were eventually developed, largely by John Sheehan (American, 1916-1992). As a result, many different penicillin versions are now made synthetically.

Chemists have developed numerous other antibiotic agents, including streptomycin, erythromycin, and the tetracycline family. Drugs with names ending in *mycin* were first derived from various microorganisms in the soil. In rapid succession the isolation of **actinomycin** (1940), **streptothricin** (1942), **streptomycin** (1943), and **neomycin** (1949), produced by *Streptomyces*, were reported and in 1942 the word antibiotic was introduced. **Chloramphenicol**, the first of the so-called broad spectrum antibiotics having a wide range of antimicrobial activity, was discovered in 1947. **Aureomycin**, the first member of the commercially important tetracycline antibiotics, was discovered in 1948.

The number of naturally occurring antibiotics increased from about 30 known in 1945, to 150 in 1949, 450 in 1953, 1200 in 1960, and to 10,000 by 1990.

Notes:

1. moldy bean curd – заплесневелая бобовая закваска;
2. a pure anthrax culture – чистая культура сибирской язвы;
3. red dye trypan – трипановый красный;
4. errant experiment – неудавшийся эксперимент.

Exercise 1. Complete the sentences choosing the proper ending that corresponds to the contents of the text:

1. Bacteriostatic agents ...

a) destroy bacteria;	b) prevent bacterial growth;	c) determine bacteria.
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2. To treat infectious diseases Paracelsus recommended using

a) iodine;	b) red dye trypan;	c) mercury.
------------	--------------------	-------------
3. Alexander Fleming discovered penicillin ...

a) accidentally ;	b) experimentally ;	c) through observations
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4. Active agent in penicillin was isolated by ...

a) Fleming;	b) Florey and Chain;	c) Ehrlich.
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5. Penicillin's structure was determined by ...

a) Howard Florey;	b) Dorothy Hodgkin;	c) John Tyndal.
-------------------	---------------------	-----------------
6. The first of the so-called broad spectrum antibiotics was ...

a) tyrothricin;	b) chloramphenicol;	c) streptothricin.
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Exercise 2. Fill in the table dealing with the main discoveries of antibacterial drugs.

Year of the discovery	Name of (a) scientist(s)	What was discovered (developed)
1907	Paul Ehrlich	development of the first true antibiotic agent
1909		
1928		
1929		
1939		
1949		

Exercise 3. Make oral translation of the following description of the drug.

STREPTOMYCIN (brief description)

Isolated in 1944 from *Streptomyces gresius* streptomycin is a complex glycosidic base usually prepared as the freely water soluble sulfate or hydrochloride.

PROPERTIES: Only 5% absorbed following oral administration. Subcutaneous or intramuscular injections are preferred for systemic therapy. Topical preparations commonly induce hypersensitivity and should not be used.

Streptomycin distribution is extracellular. About 80% of the antibiotic is protein bound.

Streptomycin sulfate is available for use by a variety of routes, the most important being i.m. Dosage depends on the infection but it is seldom desirable (except in the treatment of tuberculosis or subacute bacterial endocarditis) to exceed the average adult dose of 0.5-1.0 g twice daily for 7-14 days, best given by deep i.m. injection. Sufficiently large doses must be given in an attempt to prevent the development of bacterial resistance. Intravenous administration is rarely indicated. Many oral preparations for the treatment of diarrheal diseases contain streptomycin.

Adverse effects. The most important hypersensitivity reactions are various skin rashes (in about 7% of patients); contact dermatitis in pharmacists, nurses, physicians who handle the drug frequently. Gastrointestinal irritation usually follows oral therapy.

Exercise 4. Read the text paying particular attention to:

- 1) indications for administration of antibiotics;
- 2) side-effects of antibiotics;
- 3) restrictions in using different antibiotics.

Antibiotics

Antibiotics must be used with caution. They should be prescribed only to treat bacterial and certain fungal infections, and only in very specific cases should they be used as a preventive measure. In addition, patients should be sure to take antibiotics for the exact length of time prescribed, even if symptoms seem to have cleared up.

Women should be aware that antibiotics can produce or aggravate yeast infections because they upset the normal balance of organisms in the vagina. If this becomes a problem during the course of taking an antibiotic, a woman should consult her physician.

Tetracycline

This class of antibiotics includes tetracycline hydrochloride and a host of other drugs whose scientific names end in "cycline". Tetracycline and various newer formulations are commonly used to treat acne, bronchitis, and certain sexually transmitted diseases (STDs), including chlamydia.

Because tetracycline increases the skin's sensitivity to ultraviolet rays, anyone taking this drug should wear a potent sunscreen outdoors, even in winter, and avoid excessive sun exposure. Also, tetracycline should generally not be taken with milk or other dairy products, which can interfere with its absorption. Supplements of iron, calcium, magnesium, and zinc can also decrease the absorption of tetracycline and so should be taken at least an hour or two before or after each dose of tetracycline. Like penicillin, tetracycline may reduce the effectiveness of birth control pills; a back-up method* of contraception is advisable, especially if tetracycline is taken during the first half of the menstrual cycle.

Tetracycline should never be used by pregnant women or women contemplating pregnancy, because it may cause tooth discoloration or even permanent bone abnormalities in the fetus. Women who have lupus, myasthenia gravis, or a history of kidney or liver disease should alert** a clinician to these conditions before taking tetracycline.

* back-up - дублирующий

** alert - предупредить

Erythromycin

Women who are allergic to penicillin and who cannot take tetracycline because they are pregnant or breastfeeding may be prescribed erythromycin.

Erythromycin should not be taken with acidic fruits or juices, which can diminish its effectiveness. Because erythromycin can potentially interfere with the efficacy of oral contraceptives, women who use birth control pills should use a back-up form of contraception while taking this drug. Anyone who has liver disease or impaired liver function should avoid erythromycin altogether.

Sulfa drugs

The sulfa drugs (for example, Bactrim and Septra) work by inhibiting the growth of bacteria rather than by killing them outright. For fighting streptococcal infections, they represent another alternative for people allergic to penicillin, and they are the drug of choice for urinary tract infections.

Prolonged use of some sulfa drugs can interfere with bone marrow, liver, and kidney function. The changes in kidney function can be minimized by drinking plenty of fluids during the course of the medication. Before taking this drug, a woman should tell her doctor if she has ever developed anemia from the use of a drug and discuss any existing liver or kidney disease.

As with tetracycline, sulfa drugs may cause a rash or sunburn with exposure to ultraviolet light, but this can be minimized with a potent sunscreen. Sulfa drugs generally should not be used during the third trimester of pregnancy because of the risk of jaundice in the newborn.

Cephalosporins

These synthetic antibiotics are often called broad-spectrum antibiotics because they are effective against many different kinds of bacteria. This class of drug is used for prophylaxis before certain surgical procedures as well as for common respiratory infections. Keflex and Ceclor are commonly prescribed brands.

Before taking cephalosporins, women with colitis, enteritis, or kidney disorders should alert their clinician to this fact. Most antibiotics, but especially the cephalosporins, can in some cases cause a severe form of diarrhea. Many people who are allergic to penicillin are also allergic to cephalosporins. Women who are pregnant or breast feeding should discuss the risks versus* the benefits with their clinician before taking cephalosporins.

* versus – в сравнении.

Fluoroquinolones

Like the cephalosporins, this relatively new class of antibiotics (which includes the drugs ciprofloxacin and norfloxacin) can be used to eradicate a wide range of bacteria, including many organisms that have become resistant to older drugs. Fluoroquinolones are effective for urinary tract, bladder, and kidney infections, as well as skin and bone infections, diarrhea, gastroenteritis, and pneumonia.

Fluoroquinolones should be taken on an empty stomach* with plenty of water. Some people develop diarrhea, vomiting, or loss of appetite while taking certain fluoroquinolones. Combining them with alcohol or antihistamines, pain medications, narcotics, sedatives, or tranquilizers can depress alertness** and reflexes, and can decrease the efficacy of the antibiotic. People with a history of epilepsy, stroke, or kidney disease should be cautious about using these antibiotics. They should not be used during pregnancy or breastfeeding because of severe effects on bone growth in the fetus or infant. Women of reproductive age should make sure they are using contraception while taking these drugs.

*on an empty stomach - на пустой желудок;

**alertness - живость, резвость.

Exercise 5. Fill in the table and sum up the information about antibiotics listed in the text.

antibiotics	indications	side-effects	cautions
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Exercise 6. Read and render in English the following newspaper article.

Тетрациклины требуют осторожности.

Тетрациклиновые антибиотики обладают широким спектром действия. Назначают их при инфекционных заболеваниях, вызванных бактериями, вирусами, риккетсиями, простейшими микроорганизмами. Тетрациклины проникают внутрь микробных клеток и подавляют их жизнедеятельность. Препараты могут использоваться при лечении пневмонии, бронхита, ангины, холецистита, пиелонефрита. Лекарства этой группы применяются в терапии эндокардита, эндометрита, сифилиса, угрей, для профилактики послеоперационных инфекций. Однако многие ранее чувствительные к тетрациклинам микробы выработали к этим антибиотикам устойчивость, поэтому при многих инфекциях используются более эффективные лекарства. Хотя тетрациклины отпускаются в аптеках строго по рецепту, некоторые

люди принимают их без назначения врача. Между тем, быстро уничтожая возбудителей заболеваний, эти лекарства как бы освобождают место для других болезнетворных микробов и грибков, нечувствительных к ним. Кроме того, от тетрациклинов погибают и полезные микробы. Вследствие этого изменяется соотношение полезных и болезнетворных микробов, и вторые берут верх. Если тетрациклины расчищают путь стафилококкам в кишечнике, у человека повышается температура, появляется озноб, тошнота, рвота, жидкий стул. Еще одно возможное осложнение при продолжительном беспорядочном применении тетрациклинов – нарушение функции печени. Оно дает о себе знать тошнотой, рвотой, болью в правом подреберье, желтушностью кожи и склер, потемнением мочи, обесцвечиванием кала. Антибиотики тетрациклинового ряда нельзя применять женщинам в период беременности и детям. Это обусловлено тем, что тетрациклины способны накапливаться в костной ткани, особенно зубной. В результате нарушается ее формирование и рост. Побочным действием тетрациклинов являются аллергические реакции, которые наблюдаются намного чаще, чем другие осложнения. Это сыпь, зуд, отек, крапивница и другие проявления аллергии. Тетрациклины требуют осторожного сочетания с другими лекарственными средствами – антацидами, пенициллинами, цефалоспоридами, витамином А. Их нельзя запивать молоком и другими молочными продуктами.

Read text 5 and do exercises that follow it. Translate the first 4 paragraphs of the text with the help of a dictionary.

TEXT 5

“CURING” THE COMMON COLD

The common cold is an acute, self-limited upper respiratory infection caused by a virus. It is the fourth most common reason for office visits to physicians in the United States and the most frequent cause of work and school absences. Adults average 3 colds per year.

The common cold is caused by a wide variety of viruses that are virtually indistinguishable clinically. The great number of cold-producing viruses (more than 200) makes it unlikely that a vaccine against colds could be effective.

Studies from the British Cold Virus Research Unit, a famous research group that has recruited hundreds of volunteers willing to be infected with the cold virus in the interests of medical science, show that exposure to cold, damp, and drafts does not increase the risk of catching a cold. Cold viruses

do have natural seasonal peaks in the early fall, midwinter, and late spring, however. In winter, crowding indoors further increases the chance of infection.

Cold viruses appear to be transmitted mainly by direct physical contact. People with colds often unconsciously touch their noses; and since the cold virus can survive up to 4 hours on hands, any hand-to-hand contact the person has with others can pass the cold along. Most cold viruses are not transmitted easily through the air, although viruses that cause flu are readily spread this way.

There is no cure for the common cold; all you can do is treat the symptoms and wait until your body fights off this annoyance. While you wait, you usually want something to make you feel better; a quick trip to a drug store reveals a staggering assortment of alleged remedies. Which one is best? Is there any real difference between all these potions and elixirs?

The FDA put together a report on exactly this question in February 1989. This report notes that two medicines *seem* more effective in fighting the symptoms of the common cold than any others: dextromethorphan and guaifenesin. **Dextromethorphan** is the most effective **cold suppressant** and **guaifenesin** is the *only* drug the FDA found effective as an **expectorant** – an agent that helps bring up mucus by decreasing its viscosity or thickness. Dextromethorphan is a less addictive chemical modification of codeine, which also works as a cough suppressant; both dextromethorphan and codeine are classed as narcotics.

For the nasal congestion of the typical cold, **decongestants** are the first line of treatment. Nasal sprays – such as oxymetazoline (Afrin) or phenylephrine (Dristan, Neosynephrine) – are more effective than oral decongestants such as pseudoephedrine (Sudafed). Nasal decongestants must be used for no more than 3 to 5 days, however, because longer use increases the likelihood of rebound nasal congestion (caused by inflammation of the nasal passages) after stopping the drug. Oral decongestants can be safely combined with nasal sprays and can be taken for a longer period, up to a few weeks.

People have tried many chemicals over the long history of combating the common cold. Expectorant “losers” include chloroform, turpentine, iodine, creosote, camphor, and pine tar extracts. Since the 1989 FDA edict, only guaifenesin is approved to be labeled as an expectorant. In August 1987, the FDA listed five approved **cough suppressants**: camphor, menthol, chlorphedianol, dextromethorphan, and codeine; the most effective were the last two. However, codeine may make you drowsy, nauseous, or constipated, and it is highly addictive. This leaves dextromethorphan as the suppressant drug of choice.

Some other agents are also useful in relieving cold symptoms; an antipyretic reduces fever and analgesics relieve the headaches and body aches

that frequently accompany colds. An antihistamine such as diphenhydramine can help relieve stuffiness, although it may make you sleepy. But the best drugs available when you have a cold, according to the FDA, are dextromethorphan and guaifenesin. (Of course, you would use only one or the other since one suppresses coughs and the other helps you cough and bring up mucus).

Over-the-counter cold remedies are a big business. Most of the medications sold for treating colds are effective and safe, and they need not be costly if trendy combination products are avoided. Drug manufacturers continue to heavily promote “shotgun” remedies designed to relieve multiple symptoms. These formulas cost much more than single-ingredient preparations and increase the likelihood of side effects.

A non-medical way of lessening the misery of a cold is eating chicken soup, which helps the body clear nasal mucus, according to data from scientific studies (as well as the experience of grandmothers). Steam and cool mist promote clearance of secretions as well. Vitamin C, on the other hand, which has been studied in a number of scientific trials, produces no consistent improvement in cold symptoms.

Exercise 1. *Agree, partly agree or disagree with the following statements. Correct the false statements.*

1. According to FDA dextromethorphan and quiaifenesin seem to be more effective in fighting the symptoms of the common cold than any others.
2. Dextromethorphan is more addictive than codeine.
3. People have tried many chemicals over the long history of combating the common cold; among them were chloroform, iodine, camphor etc.
4. In August 1987, the FDA listed 4 approved cough suppressants.
5. The most effective cough suppressants are considered to be dextromethorphan and quiaifenesin.
6. Codeine proves to be the suppressant drug of choice.
7. Vitamin C produces consistent improvement in cold symptoms.

Exercise 2. *Define the following:*

Expectorant, cough suppressant, narcotic, antipyretic, antihistamine, decongestant.

Name: most effective ...

a) cough suppressant; b) decongestant; c) expectorant “loser”.

Exercise 3. *Read the passage and fill in the gaps with the suitable words.*

How can colds and respiratory infections be prevented?

Since colds seem to be spread primarily by hand-to-hand transmission, washing hands frequently and avoiding contact with (1) offer the best path to prevention. A person suffering from a cold can reduce the chance of passing it along by using tissues rather than handkerchiefs, keeping the hands away from the nose as much as possible, and washing hands often. Smoking does not increase the likelihood of catching the common cold, but it impairs the body's mechanisms for clearing infection and increases the likelihood of (2) and other complications. Any smoker who acquires (3) or upper respiratory infection should consider using it as an opportunity to quit for good.

Each fall, (4) against that year's common strains has traditionally been recommended for healthy persons over age 65 and for people of any age who have chronic respiratory diseases or other serious ailments. But even in healthy working adults, recent studies have shown that flu vaccine can reduce episodes of (5) by 25 percent and sick leave from work by 40 percent. These studies suggest that flu vaccine for healthy adults makes (6) for individuals and is also cost-effective.

Many people take high-dose (7) in the belief that it will prevent colds, if not cure them, but the scientific studies conducted thus far have not been able to detect any preventive benefit.

1. flu vaccine; 2. bronchitis; 3. cold; 4. cold sufferers; 5. supplements of vitamin C; 6. good health sense.

Exercise 4. Reread the passage and say:

A. what one should do in order to prevent cold and respiratory infection.

Begin as follows:

In order to prevent cold, one should:

1. wash hands
2. avoid contact with,
3. keep the hands away from,
4.
5.

B. what your idea about prevention of colds and respiratory infections is.

Exercise 5. Make oral translation of the drug summary and do the task below.

COLD TABLETS

For the relief of symptoms of common cold.

Combination of an antihistaminic, analgesic, antipyretic and oral decongestant.

Each tablet contains:

Acetaminophen	325 mg
Caffeine anhydrous	30 mg
Codeine phosphate	8 mg
Carbinoxamine maleate	3 mg
Phenylephrine HCl	5 mg

INDICATIONS

Colds, acute rhinitis and allergic rhinitis, sinusitis, pyrexia, headache and allergic conjunctivitis. As an adjunct therapy in measles, rubella and chicken-pox.

CONTRAINDICATIONS

Hypersensitivity to any of the components.

DOSAGE

Adults: One tablet 3 or 4 times daily for 3 or 5 days. Treatment is most effective when started at the onset of symptoms. Never exceed the recommended dose.

PRECAUTIONS

Cold tablets may cause drowsiness. Patients subject to this effect should avoid driving a car, operating intricate machinery, or doing work that requires fine precision.

This preparation contains codeine and should not be administered to children except on the advice of a physician. Keep out of the reach of children.

Care should be observed in the use of codeine although tolerance and addiction to its use is rare.

In patients with severe respiratory depression caution should be exercised if codeine is administered. The respiratory depressant effect of codeine may be enhanced by the concurrent administration of sedatives and tranquilizers.

SIDE EFFECTS

Should any troublesome or unusual symptoms develop, doctor should be consulted.

PRESENTATION

Packs of 16 tablets.

Exercise 6. *Imagine that you are a pharmacist at a chemist's shop. A person needs some remedy for cold.*

- A.** What would you ask him about to recommend Cold tablets as a reliever of symptoms of common cold? Give the proper endings to the following questions.
- 1) Do you suffer from or ...?
 - 2) Have you got any sensitivity to ...?
 - 3) Do you tolerate well ...?
 - 4) Are you engaged in work requiring ...?
 - 5) Do you take any ... concurrently?
- B.** What would be the sufferer's answers to the questions asked?
- C.** Can the remedy be recommended to a sufferer (take into consideration his (her) answers)?
- D.** Explain to a person:
- a) how he (she) should take the medicine;
 - b) in what case(s) the medicine is contraindicated;
 - c) what the recommended dose of the drug is.

Exercise 7. *Read the following newspaper article and render it in English.*

Вообще простуда – это понятие, объединяющее целый список острых респираторных вирусных инфекций (ОРВИ) со схожими симптомами. Это достаточно серьезное заболевание, чреватое, в случае неадекватного лечения, осложнениями. Лечить ОРВИ на бытовом уровне можно только симптоматически, т.е. снизить температуру, избавиться от насморка, укрепить защитные силы организма. Для профилактики и лечения простуды успешно используются методы народной медицины: сок лука и чеснока, отвары трав, растирания уксусным или спиртовым раствором. Среди медикаментов у населения наиболее популярны жаропонижающие таблетки и почему-то антибиотики. Хотя при простуде они не помогают, а, напротив, вредят – угнетают собственную микрофлору, снижая защитные силы организма. Антибиотики на вирусы не действуют! И назначить их может только врач!

- И все же, как грамотно лечить простуду?

- В первую очередь, следует вызвать врача, особенно при высокой температуре. Ведь симптомы, характерные при простуде, присуще и более тяжелым заболеваниям (пневмонии, менингиту и т.п.). По этой же причине желателен постельный режим. Обязательно обильное питье – это выводит токсины и продукты жизнедеятельности вируса из организм. Ну и, конечно, прием лекарственных препаратов, помогающих облегчить течение болезни.

- Какие препараты лучше принимать?

- В последнее время очень популярны так называемые комплексные противопростудные препараты. И это неспроста. В их состав входят сразу несколько веществ, воздействующих на различные симптомы простуды (температуру, насморк, воспаление слизистых), а также вещества, укрепляющие иммунитет, витамины. Кроме того, дозировки активных веществ у них подобраны оптимально, они оказывают нужный эффект и исключают риск переборщить. Для наших условий использование этих препаратов - оптимальный вариант, ведь мы традиционно привыкли лечиться самостоятельно, без консультации врача.

PART IV. Speech Exercises

Exercise 1. *Extend the idea in of the following statements:*

1. For a long period of time, human beings have sought pain relief. One of the earliest analgesics was willow bark. Chemists discovered that the salicylic acid Eventually Gerhardt synthesized aspirin, which Alternatives such as ... have joined aspirin as modern-day analgesics.
2. Antibacterial agents are chemicals that fight the bacteria that can cause infectious diseases. These chemicals can be either bacteriocidal or bacteriostatic
3. The common cold is a viral illness that affects nearly everyone now and then though people have tried dozens of chemicals to relieve cold symptoms, only a few have proven effective in laboratory tests
4. A major breakthrough in chemotherapy occurred in 1929 when the Scottish bacteriologist Alexander Fleming reported on the bacterial action of culture of a Penicillin species

Exercise 2. *Prove that:*

1. aspirin is dangerous for children;
2. utility of aspirin grows with each passing year;
3. some potent analgesics are addictive;
4. some anesthetics discovered in the 19th and 20th centuries didn't find wide application in medicine and dentistry.

Exercise 3. *Make up your own situations using the words and word-combinations.*

- A. grandmother, to be fond of, home remedies, to catch cold, to treat, herb tea, camomile tea, honey, cough. hot foot-baths, warm salt-water gargle (полоскание), to reduce discomfort of the sore throat.

B. my friend, suffer from flu, prefer to ingest home remedies, to be ineffective, to consult a doctor, to prescribe drugs, antipyretic, sedatives; to keep one's bed; to recover due to ...

Exercise 4. *Suppose your friend caught a cold. What would you recommend him to do to relieve cold symptoms. Which of the available drugs would make your friend feel better? Try to use the following phrases:*

If I were you,	}	I would	You should ...
If I were in your shoes,		I strongly recommend you to ...	
			It would be better to ...

Exercise 5. *Answer the question with two or more sentences.*

1. Why aspirin is called an all-purpose medicine?
2. What are the main disadvantages of aspirin?
3. What alternatives to aspirin do you know?
4. What are more potent prescription analgesics used for?
5. What is the difference between analgesics and anesthetics?
6. What do local anesthetics operate on?
7. What is the action of general anesthetics?
8. What anesthetic agents were used in the 19th and in the first half of the 20th centuries? Are they still used nowadays?
9. What natural substances were used as antibacterial agents?
10. What scientists were the firsts to develop antibiotic agents?
11. What antibiotics were developed and introduced into clinical practice in the 50-es – 90-es of the 20th century.
12. What chemicals did people try over the long history of combating the common cold?
13. How can colds and respiratory infections be prevented?

Exercise 6. *Get ready to speak on the topic "Commonly used drugs" using the previous exercise as an outline.*

APPENDIX

TABLE OF IRREGULAR VERBS

Infinitive Неопределенная форма глагола	Past Indefinite Прошедшее простое	Past Participle Причастие прошедшего времени	Главные значения
arise	arose	arisen	возникать; подниматься; вставать; происходить; являться результатом (from)
awake	awoke	awoke, awaked	будить; просыпаться
be	was, were	been	быть
bear	bore	born	носить; рожать, производить; выдерживать; влиять; подтверждать (out)
become	became	become	становиться
begin	began	begun	начинать(ся)
bend	bent	bent	сгибаться; гнуть(ся); напрягать; направлять
bind	bound	bound	связывать; переплетать
blow	blew	blown	дуть; раздувать
break	broke	broken	ломать(ся), разрушать(ся)
breed	bred	bred	выводить, порождать
bring	brought	brought	приносить, доставлять; вызывать; осуществлять (about); выявлять (out); доводить до (to)
build	built	built	строить
burn	burnt	burnt	сжигать; гореть
burst	burst	burst	лопнуть; взрываться; разразиться
buy	bought	bought	покупать
catch	caught	caught	ловить; поймать; схватить; догнать
choose	chose	chosen	выбирать
come	came	come	приходить; приезжать

cost	cost	cost	стоить, обходиться
cut	cut	cut	резать; снижать; сокращать
deal	dealt	dealt	иметь дело с (with)
do	did	done	делать, исполнять; отделаться (away with)
draw	drew	drawn	тащить; тянуть; везти; рисовать; извлекать, черпать
drink	drank	drunk	пить
drive	drove	driven	везти; приводить в действие
dwelt	dwelt	dwelt	жить, пребывать
eat	ate	eaten	есть
fall	fell	fallen	падать
feed	fed	fed	кормить; снабжать; подавать
feel	felt	felt	чувствовать
fight	fought	fought	сражаться, бороться
find	found	found	находить
fly	flew	flown	летать, бежать
forbid	forbade	forbidden	запрещать
forget	forgot	forgotten	забывать
forsee	forsaw	forseen	предвидеть
freeze	froze	frozen	замораживать; мерзнуть; застывать
get	got	got	получать; приобретать; становиться
give	gave	given	давать, предоставлять; уступать; отказываться от (up)
go	went	gone	идти; ехать
grind	ground	ground	молоть; тереть; шлифовать
grow	grew	grown	расти, выращивать, увеличиваться; становиться
hang	hung	hung	вешать, висеть
have	had	had	иметь
hear	heard	heard	слышать
hide	hid	hidden	прятать, прятаться; держать в тайне
hit	hit	hit	ударять; наткаться; задевать; попадать
hold	held	held	держать; быть справедливым; иметь силу; проводить (собрание и т.п.)
hurt	hurt	hurt	вредить; ранить; портить;

			причинять боль
keep	kept	kept	держатъ; хранить; задерживать (down), придерживать (to)
know	knew	known	знать
lay	laid	laid	класть
lead	led	led	вести; управлять
learn	learnt	learnt	учиться; узнавать
leave	left	left	оставлять; покидать
lend	lent	lent	ссужать; придавать
let	let	let	позволять; пускать; сдавать в наем
lie	lay	lain	лежать
light	lit	lit	зажигать
lose	lost	lost	терять; отдавать
make	made	made	делатъ; приготавливать; заставлять; составлять (up)
mean	meant	meant	предполагать; значить
meet	met	met	встречать; сталкиваться; удовлетворять; пересекать
mislead	misled	misled	вводить в заблуждение
overcome	overcame	overcome	побороть, преодолеть
pay	paid	paid	платить
put	put	put	класть, ставить; выдвигать (forward); записывать (down); откладывать (off)
read	read	read	читать
rise	rose	risen	вставать; восставать; подниматься
run	ran	run	бежать; протекать, проходить
saw	sawed	sawn	пилить
say	said	said	говорить; сказать
see	saw	seen	видеть
seek	sought	sought	искать, стремиться; стараться
sell	sold	sold	продавать
send	sent	sent	посылать
set	set	set	ставить; заходить (о солнце); устанавливать
shake	shook	shaken	трясти; колебаться
shape	shaped	shaped	придавать форму
shine	shone	shone	сиять; блестеть
show	showed	shown	показывать
shrink	shrank	shrank	сжиматься

shut	shut	shut	закрывать
sing	sang	sung	петь
sit	sat	sat	сидеть
sleep	slept	slept	спать
smell	smelt	smelt	пахнуть; нюхать
speak	spoke	spoken	говорить
speed	ped	ped	ускорять
spell	spelt	spelt	читать по буквам
spend	spent	spent	тратить; проводить (время)
spin	span	spun	прясть; вертеть(ся)
split	split	split	расщеплять(ся)
spoil	spoilt	spoilt	портиться
spread	spread	spread	распространять(ся); простираться
spring	sprang	sprung	прыгать; зарождаться
stand	stood	stood	стоять; выдерживать
stick	stuck	stuck	прилипать
strike	struck	struck	ударять; бить; бастовать
swear	swore	sworn	клясться; присягать
sweep	swept	swept	мести; сметать
swing	swung	swung	качаться, колебаться
take	took	taken	брать; принимать; полагать, считать
teach	taught	taught	учить
tear	tore	torn	разрывать, рвать
tell	told	told	сказать; сообщать; отличать (from)
think	thought	thought	думать; полагать
throw	threw	thrown	бросать
undergo	underwent	undergone	испытывать; подвергаться
wake	woke, waked	woken, waked	просыпаться
wear	wore	worn	носить, изнашивать
win	won	won	выигрывать; завоевывать
wind	wound	wound	крутить(ся)
withdraw	withdrew	withdrawn	уходить; удаляться; отзываться
write	wrote	written	писать

PLURALS

The rules for commonly forming plurals of medical terms are as follows:

1. For words ending in **is**, drop the **is** and add **es**:

Examples:

<i>Singular</i>	<i>Plural</i>
anastomosis	anastomoses
metastasis	metastases
epiphysis	epiphyses
prosthesis	prostheses

2. For words ending in **um**, drop the **um** and add **a**:

Examples:

<i>Singular</i>	<i>Plural</i>
bacterium	bacteria
diverticulum	diverticula
ovum	ova
datum	data

3. For words ending in **us**, drop the **us** and add **i**:

Examples:

<i>Singular</i>	<i>Plural</i>
calculus	calculi
bronchus	bronchi
nucleus	nuclei

Some exceptions to this rule include **viruses** and **sinuses**.

4. For words ending in **a**, retain the **a** and add **e**:

Examples:

<i>Singular</i>	<i>Plural</i>
vertebra	vertebrae
bursa	bursae
bullae	bullae

5. For words ending in **ix** and **ex**, drop the **ix** or **ex** and add **ices**:

Examples:

<i>Singular</i>	<i>Plural</i>
apex	apices
varix	varices

6. For words ending in **on**, drop the **on** and add **a**:

Examples:

<i>Singular</i>	<i>Plural</i>
ganglion	ganglia
spermatozoon	spermatozoa

SOME OF THE MOST COMMON PREFIXES AND SUFFIXES USED TO FORM MEDICAL TERMS

Prefixes:

anti- “against”, “antipruritic”;
 bi(o) – “relating to life”;
 chem(o) – “drug”, “chemotherapy”;
 contra- “against”, “contraindication”;
 cyt(o) – “pertaining to the cell”;
 eu – “well”;
 glyc(o) – “sugar”;
 hem(o), hem(a) – “blood”;
 hist(o) – “tissue”;
 hyper – “excess”, “pathologic increase”;
 hypo – “under”;
 hypn(o) – “sleep”;
 intra- “within”, “intramuscular”;
 iso – “equal”;
 micr(o) – “unusually small”;
 narc(o) – “numbness, stupor”;
 -phylaxis – “protection”, “anaphylaxis”;
 psych(o) – “pertaining to the mind”;
 pyr(o) – “fever”;
 vas(o) – “vessel”;
 vit(o) – “life”;
 vit(a)

Suffixes:

algesi(o) – “sensitivity to pain”, “analgesic”;
 -cidal – “pertaining to killing”, “bacteriocidal” (*Also spelled bactericidal.*);
 -coccus – “round bacterium”;
 -eal – “pertaining to”;
 -emia – “state of blood”;
 -esthesia – “feeling”, “sensibility”;
 esthesi(o) – “feeling” (*nervous sensation*), “anesthesia”;
 -itis – “inflammation of an organ”;
 -logy – “science”, “sum of knowledge”;
 -lysis – “dissolution, “disintegration”;
 -meter – “instrument for measure”;

myc(o) – “mold” (*a type of fungus*), “erythromycin” (*This antibiotic is produced by a red mold.*), “streptomycin”;
-pathy – “disease”, “morbid conditions”;
-phoria – “feeling” (*mental state*), “euphoria”;
-penia – “deficiency”;
-statis – “pertaining to stopping, controlling”, “bacteriostatic”.

ABBREVIATIONS

a.c. Before meals (*ante cibum*).
A.D. (Anno Domini) нашей эры
aq. Water (*aqua*).
B.C. (before Christ) до нашей эры
b.i.d. Twice a day (*bis a die*).
BP Blood pressure.
BT Bleeding time.
ca – **circa** = approximately.
CBC, c.b.c. Complete blood count.
cc. Cubic centimetre (unit of mass; 1/1000 liter).
CV Cardiovascular.
e. g. (exempli gratia) = for example например
etc. (et cetera) и так далее
FDA Food and Drug Administration.
G.I. Gastro-intestinal.
Gm., gm. Gram.
h.s. At bedtime (*hora somni*).
I Iodine.
i. e. (id est) = that is то есть
I.M. Intramuscular injection
I.V. Intravenous injection.
kg. Kilogram (1000 grams).
KUB Kidney, ureter, and bladder (abdominal x-ray).
L. Liter.
LD lethal dose.
LSD lysergic acid diethylamide.
mc Millicurie (dose of radiation).

- med. (medium)** средняя, средний
- ml.** Milliliter (1/1000 liter).
- mm. Hg** Millimeters of mercury.
- mm.** Millimeter (1/1000 meter; 0,039 inch).
- NSAID** Nonsteroid anti-inflammatory drug.
- p. m. (post meridiem)** после полудня (**meridies**) полдень
- p.c.** After meals (*post cibum*).
- p.o.** Orally (*per os*).
- p.r.n.** As required (*pro renata*).
- post op.** Post - operative.
- q.** every (*quisque*).
- q.d.** Every day (*quaeque die*).
- q.h.** Every hour (*quaeque hora*).
- q.i.d.** Four times daily (*quaterni die*).
- q.n.s.** Quantity not sufficient.
- Ra** Radium.
- R_x** Take (prescription).
- S.T.Ds.** Sexually transmitted diseases.
- spp.** species.
- Staph.** Staphylococcus.
- t.i.d.** Three times daily (*terni die*).
- THC** tetrahydrocannabinol.
- U.S.P.** United States Pharmacopeia.
- v. v. (vice versa)** наоборот

GLOSSARY

- Acetaminophen** a medicine that reduces pain and fever.
- acquired immune-deficiency syndrome (AIDS)** a fatal viral disease of the immune system.
- addiction** a physical dependence upon a drug.
- additive** a substance added to food to prevent spoilage or to improve appearance, texture, or taste.
- allergy** a reaction of the body to an irritating substance.
- amphetamine** a drug prescribed to stimulate the central nervous system to make a person feel less tired or to reduce a person's appetite.
- amphetamines** a group of very strong stimulants.

analgesics drugs which decrease sensitivity to pain. Examples are aspirin and acetaminophen.

anaphylactic shock an acute allergic reaction to a drug, chemical, or foreign substance. Symptoms include asthma, fall in blood pressure, and swelling of the larynx (laryngeal edema).

androgenic any sex hormone, produced especially by the testes, that induces or strengthens masculine characteristics, such as beard, large muscles, or a deep voice.

anemia a blood condition caused by either too few red blood cells or too little hemoglobin to transport adequate oxygen to the cells.

anesthetics drugs which produce a loss of nervous sensation and block the awareness of painful stimuli.

antibiotic a medicine made from fungi or bacteria that fights disease-causing bacteria.

antibody protein in the blood that produces resistance against pathogens or their toxins.

antihistamine drug which block the action of histamine in the body.

antinauseant drug which relieves nausea and vomiting.

antipyretics drugs which relieve fever.

antispasmodic drug which relieves spasms of bowels.

anxiety fear of the future or the unknown.

Ayurveda, meaning the "Science of life" is the oldest and most complete medical system in the world dating back to 3000 B.C., its roots are in Indian civilization and Hindu philosophy.

bacteria one-celled organisms made up of a very small amount of living matter surrounded by a thin cell wall.

barbiturate a strong depressant made from barbituric acid to help a person relax; often used as a sleeping aid; often abused.

barbiturates drugs which have sedative and hypnotic action. Examples are Phenobarbital and pentobarbital.

Belladonna drug containing atropine and used as an antispasmodic and sedative agent.

birth defect a disorder of a developing and newborn baby.

brand name or **trade name** is the private property of the individual drug manufacturer and no competitor may use it.

bronchitis an inflammation of the mucous membrane of the bronchi.

caffeine a legal stimulant that is found in coffee, soft drinks, and cocoa.

cancer a group of diseases characterized by an uncontrolled growth of cells that invade and destroy healthy tissue.

carbohydrates nutrients containing only carbon, hydrogen, and oxygen; sugars and starches.

- carbon dioxide** a waste product that cells produce when breaking down glucose for energy.
- carbon monoxide** a highly poisonous gas that has no odor or color.
- carcinogen** any chemical, organism, or type of radiation that causes cancer.
- chemotherapy** the use of chemical medicines to treat disease.
- chewing tobacco** tobacco that is made of poor-quality leaves mixed with honey or molasses.
- chicken pox** a mild, contagious disease of children, accompanied by a rash on the skin.
- chief effect** the physical or mental change for which a drug is taken.
- chronic disease** an illness that lasts a long time.
- circumcision** the surgical removal of the foreskin from the penis.
- cocaine** a stimulant that is extracted from the coca plant.
- codeine** a narcotic; a weak pain reliever used in cough medicine.
- common cold** an infectious disease caused by many different viruses, characterized by a runny nose, sore throat, and coughing.
- complex carbohydrate** a carbohydrate made of many sugars.
- compress** a pad of dry or wet cloth applied to a part of the body to prevent bleeding or to lessen inflammation.
- conscience** the part of an individual that separates right from wrong.
- constipation** a condition in which the bowel movements are difficult and do not occur often enough.
- contraindications** factors in a patient's condition which make the use of a drug dangerous and ill advised.
- convulsion** an intense involuntary muscular contraction in which a person becomes unconscious and the body becomes stiff.
- coping** dealing with a problem or difficult situation.
- crack** a rocklike form of cocaine that is smoked rather than sniffed.
- cramp** a painful, involuntary muscle contraction.
- decoction** a preparation, made by boiling a substance in water or other liquid.
- deficiency** having too little of a necessary substance.
- depressant** a drug that slows down the body's mental or physical abilities.
- depressants** agents that decrease the functioning of an organ or system.
- depression** a feeling of sadness, worthlessness, helplessness, or isolation.
- dermatitis** a skin condition characterized by redness and swelling; may result from many causes.
- detoxification** the process by which a drug is withdrawn from a user's

body.

diabetes mellitus a condition characterized by high blood sugar and resulting from the body's inability to produce or properly use insulin.

digitalis glycosides drugs which increase the rate and force of the heart-beat when the heart is in failure. Synthesized or obtained from an active ingredient of the foxglove plant.

diuretic drug which increases the amount of urine (water) excreted, thereby reducing the volume of blood and lowering blood pressure.

drug a substance other than food that changes the structure or function of the body, mind, or both.

drug abuse the use of any drug for other than medical purposes.

drug maintenance program a method of treatment in which narcotics addicts receive a legal drug in place of the illegal drug.

otitis media pain in the ear.

emotion the strong, immediate reaction that a person feels in response to an experience.

enzyme a protein that speeds up the chemical activity of the body.

erythromycin an antibiotic substance derived from a red mold; it's generally more active against gram-positive bacteria than gram-negative.

essential amino acid an amino acid necessary for a healthy body that must be supplied by the food one eats.

estrogen a hormone produced by the ovaries.

ethanol the kind of alcohol found in alcoholic drinks; the only alcohol that is safe to drink.

euphoria extreme happiness or sense of well-being.

expiration date the date after which a medicine may no longer be effective or safe.

fainting a momentary loss of consciousness.

fat-soluble vitamin a vitamin that dissolves in fat and can be stored in the body.

fever the body's response to infection by raising its temperature and taking other actions.

fluoride a tasteless, odorless chemical that unites with tooth enamel to increase resistance to tooth decay.

fungi small plantlike organisms.

gene the basic unit of heredity.

generic name the common name of a substance.

glucose blood sugar.

gout an inflammation of the joints due to a build-up of uric acid.

gram-negative bacteria a general class of bacteria which, when stained

with the Gram stain and its “counter” stain, fails to retain the purple Gram stain, but takes on the red color of the “counter” stain. Examples are the bacteria which cause typhoid fever and urinary tract infections (*Escherichia coli*).

gram-positive bacteria a general class of bacteria which, when stained with the Gram stain and its “counter” stain, retains the purple color of the Gram stain. Examples are staphylococci and streptococci.

habit an activity repeated so often that one does not think before doing it.

hallucinate to experience a hallucination.

hallucination the sensation of seeing, hearing, or sensing something that does not exist.

hallucinogen a drug that causes hallucination.

hashish a drug made from extracts of the marijuana plant.

hay fever an allergy to the pollen spread by plants.

health the state of physical, mental, and social well-being.

heart attack a sudden, life-threatening malfunction of the heart muscle.

heart failure a condition in which the heart is no longer able to pump a normal amount of blood.

herb a plant whose leaves or stems are used for medicine, seasoning, food or perfume.

herbal

– *adj.* of, having to do with, or made from herbs;

– *n.* a book about herbs or plants, giving their kinds, qualities, uses and the like.

herbal cigarette a cigarette made from the leaves of herbs; may include tobacco.

herbalism the study or use of herbs, especially medicinal herbs.

herbalist a person who gathers or deals in herbs especially medicinal herbs.

heredity the passing of biological characteristics from parents to child.

heroin a powerful illegal narcotic.

high blood pressure the serious condition that occurs when blood pressure is higher than normal for long periods of time; also called hypertension.

histamine a substance that increases the flow of gastric juices in the stomach and dilates the walls of small blood vessels.

hypertension high blood pressure.

hypnotic a very strong depressant that brings on sleep.

Ibuprofen a medicine that eases pain and reduces swelling.

illegal drug a drug that is forbidden by law because its harmful effects outweigh any useful purpose.

- indigestion** the inability to digest food properly.
- infectious disease** a disease caused by a pathogen and passed from one person to another.
- inflammation** the redness, swelling, and tenderness in an infected area.
- influenza** an infectious disease caused by many different kinds of viruses, all of which bring on fever, aches, coughing, and a tired feeling.
- infusion** a liquid extract obtained by steeping or soaking.
- inhibition** check on the emotions.
- insomnia** the inability to sleep.
- insulin** a hormone that is released by the pancreas and controls how the body uses glucose for energy.
- interferon** a chemical that signals other cells to fight a virus.
- intravenous (IV) needle** a needle used to inject drugs into a person's veins.
- kidney failure** a serious condition in which the kidneys cannot effectively remove wastes from the blood.
- kidney stone** a urinary disorder in which solid particles build up in the kidney.
- labor** the process of birth.
- laxative** drug which promotes defecation (mild drug).
- lead** a poisonous metal added to some gasolines.
- legal drug** a drug that is considered useful enough to be sold.
- leucopenia** an abnormal decrease in a number of leucocytes or white blood cells.
- low tar, low nicotine cigarette** a cigarette with special filters that reduce the amount of tar and nicotine in the smoke.
- Lysergic acid diethylamide (LSD)** a very powerful hallucinogen that has many harmful effects on the body.
- malignant tumor** a cancerous growth.
- marijuana** a stimulant, depressant, and hallucinogen that comes from the leaves and seeds of the Indian hemp plant, *Cannabis sativa*.
- medicine** a substance used to treat medical problems or diseases.
- menstruation** the monthly process in which an unfertilized egg cell and the inner lining of the uterus are discharged from a woman's body.
- mental illness** any disease of the mind that affects the emotions, thoughts, or personality of an individual.
- mescaline** a hallucinogen found in peyote.
- methadone** a synthetic narcotic taken by mouth and used to spare addicts from the pain of withdrawal.
- miscarriage** the process in which a nonliving embryo is expelled from the

body.

mood disorder a condition in which a single, often painful, mood rules the whole personality.

morphine a powerful narcotic.

muscle cramp a sudden, involuntary, and often painful muscle contraction.

narcotic a powerful drug that depresses the senses; usually derived from the opium poppy.

narcotics drugs which produce sleep and are habit-forming opiates, such as morphine and heroin and synthetic drugs, such as meperidine (Demerol).

nicotine an addictive stimulant found in tobacco.

nicotine gum a prescription chewing gum containing nicotine.

night blindness a condition characterized by poor vision in dim light.

nitrous oxide an inhalant used as a mild painkiller.

noninfectious disease a disease that is not caused by a pathogen.

nutrient a substance found within food that the body needs to function properly.

nutrition the process by which the body takes in and uses food.

opium a drug derived from the seed pods of a certain poppy; a narcotic.

overdose an excessive dose of a drug, often causing shock, coma, or death.

over-the-counter drug a drug that may be purchased without a doctor's prescription.

paregoric a narcotic used to control diarrhea and relieve pain from teething in infants.

pathogen an organism that causes disease.

penicillin an antibiotic substance derived from a mold; it's bacteriostatic in its action but also slightly bactericidal.

peyote a hallucinogenic cactus that grows in the Southwest of the USA and Mexico.

pharmacist a specialist who is qualified to prepare and sell medicines; a druggist.

physical dependence addiction.

physiomedicalism the study of healing through the use of organic substances.

phytotherapy the treatment of diseases or disorders using plants.

placebo effect improvement for natural reasons and not because of the substance that a quack provides.

pneumonia a viral or bacterial infection that causes an inflammation of the lung tissue.

poultice a soft, moist mass, especially of mustard, herbs, or flaxseed,

applied hot to the body as a medicine.

prescription drug a drug that may be legally purchased only with a doctor's written permission.

protein a chemical made up of amino acids that builds and repairs body cells.

psychoactive drug a mind-altering drug.

psychological dependence the state of being dependent on something to the point of becoming emotionally upset without it; habituation.

pupil the round opening that allows light to enter the eye.

quack someone who pretends to have medical skills but in fact has none.

quackery the act of selling products as cures when they have little or no healing power.

quinidine anti-arrhythmic drug; helps to restore the heart rhythm.

resin a clear or yellow-brown plant material.

retina the part of the eye that absorbs light rays and changes them into electrical messages.

Reyes's syndrome a rare and often fatal disease of the brain, occurring among very young children usually after a common viral infection and associated with the administration of aspirin to treat the initial infection.

rubella German measles; a viral disease characterized by a skin rash, mild fever, sore throat, and a runny nose.

saccharine a human-made substitute for sugar identified as a cancer-causing substance when taken in large amounts.

seizure an attack of epilepsy.

shingles a disease in which the chicken pox virus attacks a nerve root.

shock a serious slowing down of the circulatory and nervous system.

side effect an unexpected or undesirable reaction to a drug.

simple carbohydrate a carbohydrate made of one kind of sugar.

steroid a synthetic drug that is like the male hormone testosterone.

stimulant a drug that speeds up the body's mental or physical activities.

streptomycin an antibiotic substance derived from a mold and active against the tubercle bacillus (bacterium causing tuberculosis) and a large number of gram-positive and gram-negative bacteria.

stress the body's response to physical or mental demand or pressure.

stroke brain damage caused by a blockage or rupture of a blood vessel in the brain.

sulfonamides sulfa drugs to inhibit the growth of bacteria.

suppression the blocking out of unpleasant thoughts.

symptom a signal of the existence of illness.

- synergism** the combined action of different agents or organs producing a greater effect than the sum of the various individual actions, as in a medicine composed of several drugs.
- synthetic drug** a drug created in a laboratory by combining other chemicals.
- tar** a dark oily mixture consisting mainly of carbon and hydrogen.
- teratogenicity** the quality of being teratogenic; tendency to cause malformations of the embryo or fetus.
- testosterone** a male sex hormone that is produced by the testes.
- tetracycline** antibiotic substance derived from a mold T. is effective against many types of bacteria.
- tumor** a group of cells that form in a mass.
- tincture** a solution of medicine in alcohol or in a mixture that is chiefly of alcohol.
- tolerance** a resistance to the effects of a drug.
- tolerate** to endure or resist the action of (a drug, poison, or other, usually harmful, substances).
- toxic** poisonous or deadly.
- toxin** a poison.
- tranquilizer** a type of depressant that can calm a person without making him or her less alert.
- ulcer** an open sore in the lining of the stomach or other parts of the digestive system.
- unconscious** the part of the personality that cannot be observed.
- unconsciousness** the state of having temporarily lost full awareness.
- vaccination** a treatment in which the body is given a small dose of a disease, causing the body to build up an immunity against it.
- vasoconstrictors** drugs which constrict muscle fibers around blood vessels and narrow the size of the vessel opening.
- vasodilators** drugs which increase the size of blood vessels by relaxing the muscles in the vessel walls.
- virus** a single unit of genetic material in a protein shell.
- vitamin** a chemical substance that helps transform digested food into tissue and help regulate body functions.
- water** a liquid that is essential for all life processes.
- water-soluble vitamin** a vitamin that dissolves in water and cannot be stored in the body.
- wellness** a condition of physical, mental, and social wellbeing.
- withdrawal** the discomfort that people suffer when they stop taking a drug to which they are addicted.

Словарь

А

abbreviation <i>n</i>	сокращение
abloom <i>n</i>	цвет, цветение
abundant <i>a</i>	обильный
abuse <i>n</i>	злоупотребление; неправильное употребление
accept <i>v</i>	принимать; допускать, соглашаться, признавать
accident <i>n</i>	несчастный случай; случайность
accomplish <i>v</i>	совершать, выполнять
account <i>v</i>	считать за; отвечать (for-за что-л.); объяснять (for-что-л.); on ~ of из-за, вследствие, на основании
acne <i>n</i>	угри, акне
addict <i>n</i>	наркоман
addiction <i>n</i>	наркомания
addictive <i>a</i>	зависимый от пагубный привычки, наркоман
adequately <i>adv</i>	достаточно; соответственно
adjunct <i>n</i>	вспомогательное средство (при лечении)
administer <i>v</i>	назначать (давать) лекарство
administration <i>n</i>	назначение или применение (лекарства, диеты), введение лекарства; route of ~ способ введения лекарства
adonis <i>n</i>	горицвет, адонис
adopt <i>v</i>	принимать
adrenal cortex	кора надпочечников
advance <i>n</i>	продвижение вперед; прогресс, успех
advantage <i>n</i>	преимущество; выгода, польза
advent <i>n</i>	приход, прибытие
adverse <i>s</i>	неблагоприятный, вредный
advertise <i>v</i>	рекламировать
advertisement <i>n</i>	реклама
advise <i>v</i>	советовать, сообщать
advocate <i>v</i>	отстаивать
affect <i>v</i>	воздействовать, влиять
agranulocytosis <i>n</i>	агранулоцитоз (отсутствие или уменьшение количества гранулоцитов в крови)
alert <i>n</i>	тревога;
<i>v</i>	предупреждать об опасности
alertness <i>n</i>	бдительность, настороженность; живость,

	резвость
allergy <i>n</i>	аллергия
alleviate <i>a</i>	облегчать (боль, страдание)
alter <i>v</i>	чередовать
although <i>conj</i>	хотя, если бы даже
altogether <i>adv</i>	вполне, всецело; в общем, в целом
angina pectoris <i>n</i>	грудная жаба
angioedema <i>n</i>	ангионевротический (острый, ограниченный) отек, гигантская крапивница, болезнь Квинке
annoyance <i>n</i>	досада, раздражение, неприятность
anthelmint(h)ic <i>n</i>	противоглистное средство
anthrax <i>n</i>	сибирская язва
anti-inflammatory <i>a</i>	противовоспалительный
antipyretic <i>n</i>	жаропонижающее средство;
<i>a</i>	противолихорадочный, жаропонижающий
antitusive <i>n</i>	противокашлевое средство;
<i>a</i>	противокашлевый
anxiety <i>n</i>	беспокойство, тревога; опасение, забота
ape <i>n</i>	(человекообразная) обезьяна
apply <i>v</i>	прилагать; применять; прикладывать
appoint <i>v</i>	назначать, утверждать
approval <i>n</i>	одобрение, утверждение
arachidic acid	арахиновая кислота
arise (arose, arisen) <i>v</i>	возникать, появляться
arrow <i>n</i>	стрела
arsenic <i>n</i>	мышьяк;
<i>a</i>	мышьяковый
art <i>n</i>	умение, способ
artificial <i>a</i>	искусственный
assay <i>n</i>	проверка, проба
assess <i>v</i>	определять, оценивать
assign <i>v</i>	предназначать; назначать
assumption <i>n</i>	предложение, допущение
attack <i>n</i>	приступ, припадок;
<i>v</i>	поражать, разрушать, воздействовать
attempt <i>n</i>	попытка, проба;
<i>v</i>	пытаться, пробовать
attract <i>v</i>	привлекать, притягивать
authority <i>n</i>	власть; авторитет, крупный специалист
available <i>a</i>	доступный, имеющийся в распоряжении; при(годный), полезный

average <i>n</i>	среднее число, средняя величина;
<i>v</i>	в среднем равняться, составлять
avert <i>v</i>	отводить взгляд, отвлекать мысль; отвращать
	предотвращать (удар, опасность и т.п.)
avoid <i>v</i>	избегать, сторониться, уклоняться

В

background <i>n</i>	предпосылка, данные, объяснение
badly <i>adv</i>	плохо, очень плохо
baking <i>n</i>	выпечка
baldness <i>n</i>	плешивость
balm <i>n</i>	бальзам, болеутоляющее средство
ban <i>n</i>	запрещение;
<i>v</i>	налагать запрет
Barret's syndrome	хроническая пептическая язва нижней трети пищевода, синдром Баррета
behavioral <i>a</i>	относящийся к поведению
belief <i>n</i>	вера
belladonna <i>n</i>	белладонна, красавка
benefit <i>v</i>	помогать, приносить пользу;
<i>n</i>	выгода, польза, прибыль
bilberry <i>n</i>	черника
bind (bound) <i>v</i>	связывать, задерживать, ограничивать
blame <i>v</i>	порицать, считать виновным
bleed <i>v</i>	кровоточить, истекать кровью; проливать кровь; пускать кровь
bleeding <i>n</i>	кровотечение; кровопускание;
<i>a</i>	обливающийся, истекающий кровью; обескровленный, обессиленный
bloodstream <i>n</i>	кровеное русло, кровоток
board <i>n</i>	правление, совет, коллегия, департамент
boldness <i>n</i>	плешивость
bone marrow	костный мозг
bowel <i>n</i>	кишка;
<i>pl.</i>	кишечник, внутренности
bowl <i>n</i>	чашка
breast <i>n</i>	грудь, грудная железа
bring about	вызывать, быть причиной
bruise <i>n</i>	синяк, кровоподтек; повреждение (растений, фруктов)
burning <i>n</i>	жжение, горение;
<i>a</i>	горячий, жгучий

buttercup <i>n</i>	бот. лютик (<i>лат. Ranunculus</i>)
button <i>n</i>	бутон
butyric acid	масляная кислота
bypass <i>n</i>	обход; обходной путь;
<i>v</i>	обходить; пренебрегать, не принимать во внимание

С

cancer <i>n</i>	рак
canning <i>n</i>	консервирование
cardiac insufficiency	сердечная недостаточность
carry out <i>v</i>	выполнять, проводить
caster bean	бот. боб касторовый (<i>лат. Ricinus communis</i>)
catch (to take) a cold <i>v</i>	простудиться; ~ a chill простудиться
catnip <i>n</i>	бот. котовник кошачий (<i>лат. Nepeta cataria</i>)
cattle <i>n</i>	крупный рогатый скот
caution <i>n</i>	предосторожность, предостережение, предупреждение
cease <i>v</i>	переставать, прекращать
cellulose <i>n</i>	целлюлоза, клетчатка
certain <i>a</i>	определенный
cessation <i>n</i>	остановка
challenge <i>v</i>	бросать вызов; оспаривать;
<i>n</i>	сложная задача, проблема
chamomile <i>n</i>	ромашка
cheat <i>v</i>	мошенничать, обманывать
check <i>v</i>	проверять, контролировать
cheesecloth <i>n</i>	марля
chew <i>n</i>	жвачка, жевательный табак;
<i>v</i>	жевать
chicken-pox <i>n</i>	ветряная оспа, ветрянка
chill <i>n</i>	простуда, озноб, лихорадка;
<i>v</i>	чувствовать озноб
china <i>n</i>	фарфор; фарфоровые изделия
chop <i>v</i>	нарезать, крошить
circumcision <i>n</i>	обрезание (<i>церк.</i>), круговое сечение
claim <i>n</i>	требование; претензия, утверждение;
<i>v</i>	требовать; претендовать; утверждать, заявлять
cleanse <i>v</i>	чистить, очищать; дезинфицировать
closely <i>adv</i>	тесно
code <i>n</i>	кодекс, моральные нормы

codliver oil	рыбий жир
coleus <i>n</i>	<i>бот.</i> колеус
combat <i>v</i>	сражаться, бороться
combustion <i>n</i>	горение
commit <i>v</i>	поручать, вверять
commitment <i>n</i>	вручение, передача; обязательство
common cold <i>n</i>	простуда
compelling <i>a</i>	неотразимый, непреодолимый
compile <i>v</i>	составлять, собирать (материал, факты); накапливать
complicated <i>a</i>	запутанный, сложный; осложненный; ~ disease болезнь с осложнениями
compose <i>v</i>	составлять
comprehend <i>v</i>	понимать, охватывать, включать
concern <i>v</i>	касаться, иметь отношение
concomitant <i>a</i>	сопутствующий;
<i>n</i>	сопутствующее обстоятельство
concurrent <i>n</i>	неотъемлемая часть, сопутствующее обстоятельство;
<i>a</i>	совпадающий, действующий совместно или одновременно
condemn <i>v</i>	осуждать, порицать
conduct <i>v</i>	вести, руководить (делом);
<i>n</i>	поведение, образ действия
confine <i>v</i>	ограничивать
confirm <i>v</i>	подтверждать, утверждать
congenital <i>a</i>	врожденный, свойственный
congestion <i>n</i>	закупорка, застой (<i>напр.</i> крови, желчи)
connection <i>n</i>	связь
conquest <i>n</i>	завоевание, покорение; завоеванная территория
consciousness <i>n</i>	сознание; to lose ~ потерять сознание; to recover (regain) ~ прийти в себя; to render ~ приводить в сознание
consequently <i>adv</i>	следовательно, поэтому
consistent <i>a</i>	последовательный, стойкий; совместимый; твердый, плотный
constipate <i>v</i>	вызывать запор
constipation <i>n</i>	запор
constitute <i>v</i>	назначать, учреждать, составлять
consume <i>v</i>	употреблять, расходовать; съедать, поглощать
consumption <i>n</i>	потребление, расход чахотка, туберкулез легких

contagious <i>a</i>	заразный, инфекционный
contemplate <i>v</i>	ожидать, рассчитывать
contemporary <i>n</i>	современник, сверстник
contraindication <i>n</i>	противопоказание
controversial <i>a</i>	спорный
convallaria <i>n</i>	ландыш (<i>англ.</i> lily of the valley)
conventional <i>a</i>	обычный, общепринятый, традиционный
convert <i>v</i>	превращать, переделывать
convince <i>n</i>	убеждать, уверять
cope <i>v</i>	справиться, совладать (with)
cough suppressant	средство от кашля
cramp <i>n</i>	судорога, спазм;
<i>pl.</i>	колики;
<i>v</i>	вызывать судорогу или спазм
craving <i>n</i>	страстное желание, стремление (for)
crucial <i>a</i>	решающий
crude <i>a</i>	сырой, неочищенный
cruel <i>a</i>	жестокий, безжалостный, бессердечный;
	мучительный, ужасный
crush <i>v</i>	дробить, размельчать
curd <i>n</i>	закваска; свернувшееся молоко; (<i>pl.</i>) творог
cure <i>n</i>	лекарство, средство; лечение;
<i>v</i>	вылечивать, исцелять
D	
damage <i>n</i>	вред, повреждение; убыток, ущерб;
<i>v</i>	повреждать, портить; наносить ущерб, убыток;
	<i>разг.</i> ушибить, повредить (о частях тела)
dandelion <i>n</i>	одуванчик
datum (data) <i>n</i>	данная величина, исходный факт, характеристика
deal <i>n</i>	большое количество массы, куча, часть;
deal with <i>v</i>	иметь дело, рассматривать, сталкиваться
decay <i>n</i>	гниение, распад;
<i>v</i>	гнить, разлагаться; портиться, ухудшаться
decoction <i>n</i>	вываривание; лечебный отвар, декокт
decongestant <i>n</i>	противозастойное или противоотечное средство
definite <i>a</i>	определенный
degeneration <i>n</i>	вырождение, перерождение
delay <i>n</i>	задержка, препятствие; замедление
deliberately <i>adv</i>	умышленно, нарочно; обдуманно, осторожно

delineation <i>n</i>	изображение, описание
delirium tremens <i>n</i>	алкогольный делирий, белая горячка
deprive <i>v</i>	мешать (<i>of</i> – чего-либо)
derivative <i>n</i>	дериват;
<i>a</i>	производное
derive <i>v</i>	происходить от (<i>from</i> из)
designed <i>a</i>	предназначенный
display <i>v</i>	проявлять, обнаруживать
destroy <i>v</i>	разрушать, уничтожать, истреблять
devote <i>v</i>	посвящать, отдавать себя
dew-point (temperature) <i>n</i>	температура таяния, конденсация
dilate <i>v</i>	расширять(ся); распространять(ся)
diminish <i>v</i>	уменьшать(-ся), убавлять(-ся); ослаблять
disadvantage <i>n</i>	недостаток, вред, ущерб
discard <i>v</i>	выбрасывать (за ненадобностью)
disease incidence <i>n</i>	заболеваемость, частота (распространенность) заболеваний
disorder <i>n</i>	расстройство
display <i>v</i>	проявлять, обнаруживать
dissipate <i>v</i>	рассеивать, разгонять (страх, сомнения); растрачивать (силу, время) <i>амер.</i> душевное расстройство; собачья чума
distemper <i>n</i>	
distinction <i>n</i>	отличие, различие
distinguish <i>v</i>	различить, проводить различие
distinguishable <i>a</i>	различимый, отличимый
distinguishing <i>a</i>	характерный, отличительный
distortion <i>n</i>	искажение, искривление
distress <i>n</i>	дистресс, тяжелое недомогание, патологическое состояние
distribute <i>v</i>	распределять, раздавать; разбрасывать (равномерно)
distribution <i>n</i>	распределение, распространение; расположение, локализация
disturbance <i>n</i>	нарушение, повреждение, срыв
diuretic <i>n</i>	мочегонное средство;
<i>a</i>	мочегонный
divert <i>v</i>	отводить, отклонять; отвлекать внимание
dizziness <i>n</i>	головокружение
double-blind	двойной, «слепой» (контроль)
doubt <i>n</i>	сомнение, сомневаться, иметь сомнения;
<i>v</i>	быть неуверенным, колебаться

drastic <i>n</i>	сильнодействующий (о лекарстве)
dressing <i>n</i>	перевязочный материал
drowsiness <i>n</i>	сонливость; гиперсомния, сомнолентность
due <i>a</i>	должный, надлежащий, обусловленный
due to	благодаря
dull <i>v</i>	притуплять(ся), делать(ся) тупым, тусклым, вялым, скучным
dump <i>v</i>	сбрасывать, сваливать (мусор)
dyspn(o)ea <i>n</i>	одышка, диспноэ, удушье
Е	
effect <i>n</i>	следствие, результат, действие, влияние, воздействие;
<i>v</i>	производить, выполнять, совершать
efficacy <i>n</i>	эффективность, сила, действенность
elicit <i>v</i>	извлекать, вытягивать, вызывать, выявлять; допытываться; делать вывод, устанавливать
eliminate <i>v</i>	устранять; уничтожать, ликвидировать; очищать, выделять, удалять из организма
elucidation <i>n</i>	разъяснение
enable <i>v</i>	давать, возможность или право (что-л. сделать)
encounter <i>v</i>	сталкиваться, (неожиданно) встретить(ся)
endure <i>v</i>	выносить, терпеть; длиться, продолжаться
english ivy	<i>бот.</i> плющ обыкновенный (<i>nam. Hedera helix</i>)
enhance <i>v</i>	увеличивать, усиливать, усугублять
entirely <i>n</i>	полнота, цельность
eradicate <i>v</i>	искоренять, уничтожать
errant <i>a</i>	странствующий; блуждающий (о мысли)
error <i>n</i>	ошибка, заблуждение
escape <i>v</i>	спастись, избежать (опасности), замыкаться в себе
essential oil	летучее масло
estimate <i>v</i>	оценивать, давать оценку, прикидывать
evaluate <i>v</i>	оценивать, определять количество
evaporation <i>n</i>	испарение, выпаривание
eventually	в конце концов
evidence <i>n</i>	очевидность; основание, данные признаки
evolve <i>v</i>	эволюционировать, развиваться; издавать (запах)
exceed <i>v</i>	превышать, превосходить

excessive <i>a</i>	чрезмерный
excipients	недействующая, индифферентная составная часть лекарства
exclude <i>v</i>	исключать
exert <i>v</i>	осуществлять
exert an action	влиять
existence <i>n</i>	существование, жизнь
expectorant <i>n</i>	отхаркивающее средство
explosive <i>a</i>	взрывчатый;
<i>n</i>	взрывчатое вещество
exposure <i>n</i>	<i>хир.</i> выделение, обнажение; экспозиция (продолжительность действия какого-л. фактора на организм)
extent <i>n</i>	объем, пределы, степень, мера
extinct <i>a</i>	вымерший

F

failed <i>a</i>	недостаточный
faint <i>n</i>	обморок, потеря сознания;
<i>a</i>	обморочный, тошнотворный
fairly <i>adv</i>	довольно, в известной степени; явно, совершенно; <i>амер.</i> безусловно, фактически
fall <i>n</i>	осень (<i>амер.</i>)
fatigue <i>n</i>	усталость, утомление
feeding <i>n</i>	питание, кормление
fetus = foetus <i>n</i>	плод (зародыш с 9 ^н недели развития до момента рождения)
fever <i>n</i>	жар, лихорадка; нервное возбуждение
film-coated	покрытый оболочкой
finished	конечное лекарственное вещество
pharmaceutical <i>n</i>	
flammable <i>a</i>	огнеопасный, легковоспламеняющийся
flavor <i>n</i>	аромат, запах
float <i>v</i>	затоплять, наводнить
flu <i>n</i>	грипп
foliage <i>n</i>	листва, листья
follow <i>v</i>	<i>перен.</i> следовать примеру; подражать
formulation	технология приготовления лекарственного средства
fox glove <i>n</i> (<i>digitalis</i>)	наперстянка
frequently <i>adv</i>	часто

G

gain <i>v</i>	получать; достигать
garnish <i>n</i>	гарнир; украшение, отделка
gash <i>n</i>	глубокая рана;
<i>v</i>	наносить глубокую рану
gauze <i>n</i>	марля
ginger <i>n</i>	имбирь
gout <i>n</i>	подагра; сгусток крови
govern <i>v</i>	управлять; регулировать; обуславливать (ход событий)
graft <i>n</i>	пересадка ткани
grant <i>v</i>	разрешать, давать согласие
great deal	значительная часть
grind (ground) <i>v</i>	молоть; растирать в порошок; толочь

H

habitat <i>n</i>	бил. родина, место распространения (растения, животного)
half-life	период выведения (<i>напр.</i> ксенобиотиков из организма)
handle <i>v</i>	обходиться, обращаться с кем-л., чем-л.; управлять, регулировать
harm <i>n</i>	вред, ущерб; зло, обида
<i>v</i>	вредить, наносить ущерб
hay fever <i>n</i>	сенная лихорадка
hazard <i>n</i>	шанс; риск, опасность;
<i>v</i>	рисковать; осмеливаться, отваживаться
heal <i>v</i>	излечивать, исцелять (of — от); заживать, заживляться (часто ~ over, ~ up)
heart attack <i>n</i>	сердечный приступ
heavily <i>adv</i>	тяжело, трудно
hemp <i>n</i>	конопля, индийская конопля; гашиш
herald <i>v</i>	возвещать, объявлять; предвещать
herd <i>n</i>	стадо, гурт
hike <i>n</i>	<i>разг.</i> длительная прогулка, экскурсия или путешествие пешком
hog <i>n</i>	боров, свинья; годовалый бычок
hore-hound <i>n</i>	<i>бот.</i> шандра (<i>лат. Morrubium glu.</i>)
house <i>v</i>	предоставлять жилище; поселить, приютить
huge <i>a</i>	огромный, громадный, гигантский
humane <i>a</i>	гуманный, человечный
humanly <i>adv</i>	по-человечески; гуманно

I

illicit <i>a</i>	незаконный, запрещенный
illness <i>n</i>	болезнь
immediately <i>adv</i>	непосредственно; немедленно, тотчас же
immunize <i>v</i>	иммунизировать
impair <i>a</i>	замедленный, ослабленный; ухудшенный
imply <i>v</i>	подразумевать, предполагать
in addition to	вдобавок, в дополнение к, кроме того, к тому же
in order to	для того, чтобы
in situ	на месте
in vitro	в лабораторном сосуде
in vivo	в естественных условиях, в живом организме
indefensible <i>a</i>	незащищенный, недоказуемый
indicate <i>v</i>	показывать, указывать
induce <i>v</i>	убеждать, вызывать, стимулировать
induction <i>n</i>	вводный наркоз
induction <i>n</i>	вступление, введение
infantile	младенческий, начальный, в первой стадии
inflammation <i>n</i>	воспаление
inflict <i>v</i>	наносить (удар, рану, урон); причинять (боль, страдания)
influence <i>v</i>	влиять, оказывать влияние
ingest <i>v</i>	глотать, проглатывать, принимать (лекарство)
inherited <i>a</i>	унаследованный; наследственный
initial <i>a</i>	начальный
initiate <i>v</i>	начинать, приступать
innocent <i>a</i>	невинный, чистый; безвредный
insecticide <i>n</i>	средство от насекомых, инсектицид
insight <i>n</i>	проницательность, способность проникновения в суть (into); интуиция, понимание
insomnia <i>n</i>	бессонница
instead of <i>adv</i>	вместо того, чтобы
intend <i>v</i>	намереваться, иметь в виду; предназначать (for)
intensify <i>v</i>	усиливать(ся)
interact <i>v</i>	взаимодействовать, действовать, влиять друг на друга
interaction <i>n</i>	взаимодействие, взаимосвязь; adverse drug ~ нежелательное взаимодействие лекарственных средств

interfere <i>v</i>	вмешиваться (<i>in</i>); служить препятствием, мешать, быть помехой; вредить; <i>to ~ with smb's health</i> вредить чему-либо здоровью
intricate <i>a</i>	запутанный, сложный
invasion <i>n</i>	инвазия, вторжение
invite <i>v</i>	приглашать
involve <i>v</i>	вовлекать, затрагивать, подразумевать
irritation <i>n</i>	раздражение, возбуждение
itching <i>a</i>	зудящий;
<i>n</i>	зуд
ivy <i>n</i>	<i>бот.</i> плющ (обыкновенный)
J	
jaundice <i>n</i>	желтуха, разлитие желчи
judicious <i>a</i>	здравомыслящий, рассудительный
justify <i>v</i>	оправдывать, находить оправдание; извинять, объяснять
L	
labor <i>n</i>	роды, родовый акт;
<i>v</i>	рожать
laborer	неквалифицированный рабочий, чернорабочий
lack <i>n</i>	недостаток, нужда; отсутствие;
<i>v</i>	испытывать недостаток, нуждаться, не иметь; не хватать, недоставать
largely <i>adv</i>	в значительной степени
lasting <i>a</i>	длительный, постоянный
latter <i>a</i>	последний (из двух названных; <i>противоп. the former</i>)
lead (<i>led, led</i>)	вести, приводить
level <i>n</i>	уровень
liable <i>a</i>	обязанный (<i>to с inf.</i>); подверженный; вероятный, возможный
lid <i>n</i>	крышка, колпак
likelihood <i>n</i>	вероятность
liniments <i>n</i>	жидкая мазь для растирания
linoleic acid	линолевая кислота
linseed <i>n</i>	льняное семя; <i>attr. ~ oil</i> – льняное масло
list <i>n</i>	список, перечень;
<i>v</i>	вносить в список; составлять список
locus <i>n</i>	место, месторасположение; геометрическое место точек

long-term <i>a</i>	долгосрочный, длительный
loose <i>v</i>	освобождать, давать волю
lower <i>v</i>	уменьшать, понижать
lupus <i>n</i>	(обыкновенная) волчанка; туберкулезная волчанка

М

maintain <i>v</i>	поддерживать
maintenance <i>n</i>	поддержка, поддержание, сохранение
manage <i>v</i>	оказывать помощь; вести больного, устранять (боль)
management <i>n</i>	лечение, управление процессом
mandrake <i>n</i>	мандрагора
market <i>v</i>	продавать, сбывать, находить рынок сбыта
marrow <i>n</i>	костный мозг; bone ~ костный мозг
mauve	розово-лиловый
meal <i>n</i>	принятие пищи, еда
meaningless <i>a</i>	бессмысленный
means <i>n</i>	средство, способ
measles <i>n pl</i>	(употр. как <i>singl.</i>) корь
mental disorder	психическое расстройство
mild <i>a</i>	легкий, слабый (<i>напр.</i> о приступе болезни)
minor <i>n</i>	несовершеннолетний, не достигший 21 года
miraculous <i>a</i>	чудодейственный, удивительный
miscarriage <i>n</i>	неудача, ошибка, выкидыш
miss <i>v</i>	промахнуться, не достичь цели; упустить, пропустить, не заметить
mist <i>n</i>	аэрозоль
mistletoe <i>n</i>	<i>бот.</i> омела белая (<i>лат. Viscum album</i>)
mistreat <i>v</i>	дурно обращаться; помыкать кем-л.
moderate <i>a</i>	умеренный; средний
mold <i>n</i>	плесень, плесенный грибок;
<i>v</i>	покрываться плесенью, плесневеть; рыллить, насыпать землю
monitor <i>v</i>	наставлять, советовать; контролировать, проверять
mood <i>n</i>	настроение, расположение духа
motility <i>n</i>	подвижность, способность к самопроизвольному движению.
mucilage <i>n</i>	сохранительная способность слизи, клейкое вещество

muscle relaxant <i>n</i>	миорелаксант
mushy <i>a</i>	мягкий, пористый
myasthenia gravis <i>n</i>	миастения
myocardial infarction <i>n</i>	инфаркт миокарда

N

nausea <i>n</i>	тошнота
needle <i>n</i>	иголка, игла хирургическая
nickname <i>n</i>	прозвище
nightshade <i>n</i>	ночная фиалка
novelty <i>n</i>	новизна, новшество, нововведение
noxious <i>a</i>	вредный, пагубный
nuclei <i>pl</i>	ядра
nucleus <i>n</i>	ядро
numbness <i>n</i>	оцепенение, нечувствительность; ооченение
nurture <i>v</i>	выращивать, питать
nutrition <i>n</i>	питание, пища

O

oak <i>n</i>	дуб
obligation <i>n</i>	обязанность, долг
observe <i>v</i>	наблюдать
occult <i>a</i>	скрытый (о кровотечении)
occur <i>v</i>	случаться, происходить
onion <i>n</i>	лук, луковица
onset <i>n</i>	начало
ooze <i>v</i>	медленно течь, медленно вытекать, сочиться
opiate <i>n</i>	опиат, наркотик; успокаивающее или снотворное средство
option <i>n</i>	выбор; предмет выбора
origin <i>n</i>	источник, происхождение
outright <i>a</i>	прямой, открытый; полный, совершенный
overlap <i>v</i>	частично покрывать, перекрывать;
<i>n</i>	совпадение
over-the-counter (OTC) <i>drug</i>	лекарства, продаваемые без рецепта
owe <i>v</i>	быть должным, быть обязанным

P

Paget's disease	деформирующий остоз, деформирующая
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pain-killer <i>n</i>	остеодистрофия, болезнь Педжета
palpitation <i>n</i>	<i>разг.</i> болеутоляющее средство
panel <i>n</i>	сильное сердцебиение
	комиссия, группа специалистов, экспертов и т.п.
pansy <i>n</i>	<i>бот.</i> фиалка трехцветная (<i>лат. Viola tricolor</i>)
paregoric <i>a</i>	болеутоляющий;
	<i>n</i> болеутоляющее средство
participant <i>n</i>	участник, участвующий
particular <i>a</i>	особенный
pepper <i>n</i>	перец
peppermint <i>n</i>	<i>бот.</i> мята перечная (<i>лат. Mentha piperita</i>)
per capita	<i>лат.</i> на человека, на душу
perceive <i>v</i>	осознавать
percentage <i>n</i>	процент, процентное отношение
perception <i>n</i>	восприятие
performance <i>n</i>	выполнение
periwinkle <i>n</i>	<i>бот.</i> барвинок малый (<i>лат. Vinca</i>)
permission <i>n</i>	разрешение, позволение
permit <i>v</i>	позволять, разрешать
perspiration <i>n</i>	потоотделение; пот, испарина
persuade <i>v</i>	убеждать
pertain <i>v</i>	принадлежать, иметь отношение (to- к чему-либо)
pertussis <i>n</i>	коклюш
petal <i>n</i>	<i>бот.</i> лепесток
physician <i>n</i>	врач
pinnacle <i>n</i>	вершина, кульминационный пункт
placebo <i>n</i> (<i>pl - os, - oes</i>)	безвредное лекарство, прописывается для успокоения больного
pod <i>n</i>	шелуха, кожура; стручок, кокон
pool	общий фонд, объединенный резерв
posology <i>n</i>	позология, дозировка, учение о дозировке
potion <i>n</i>	доза лекарства или яд, зелье, снадобье
poultice <i>n</i>	припарка;
	<i>v</i> класть припарки
powder <i>n</i>	порошок;
	<i>v</i> превращать в порошок, толочь
precaution <i>n</i>	предосторожность
precipitate <i>n</i>	осадок;
	<i>v</i> осаждаться

precision <i>n</i>	точность, четкость
predict <i>v</i>	предсказывать
prefer <i>v</i>	предпочитать
pregnancy <i>n</i>	беременность
pregnant <i>a</i>	беременная
prevent <i>v</i>	предотвращать, предохранять, предупреждать
previous <i>a</i>	предыдущий
price <i>n</i>	цена
primarily <i>adv</i>	первоначально, сперва, сначала, прежде всего; первым делом, главным образом
principle	составная часть
printing <i>n</i>	печатное дело
proceed <i>v</i>	приступать, перейти (to) к чему-л.; приниматься (за что-л.) <i>т.ж. с инф.</i>
profile <i>n</i>	показатель
prolong <i>v</i>	продлевать; продолжать
promote <i>v</i>	выдвигать, продвигать; способствовать, помогать, поддерживать; ускорять, содействовать
proper <i>a</i>	надлежащий, соответствующий
protection <i>n</i>	защита
provide <i>v</i>	обеспечивать
pruritus <i>n</i>	зуд
psychotropic	психотропный
purchase <i>n</i>	покупка, приобретение
purify <i>v</i>	очищать
purity <i>n</i>	чистота
pursue <i>v</i>	преследовать, гнаться; следовать по намеренному пути

Q

quarter <i>q</i>	район, часть города; страна света; место
quest <i>n</i>	поиски
quinine <i>n</i>	хинин
quit <i>v</i>	покидать, оставлять; бросать, прекращать

R

rabies <i>n</i>	бешенство
ragweed <i>n</i>	<i>бот.</i> амброзия полыннолистная
randomized <i>a</i>	безвыборочный, «слепой» (отбор)
randomly <i>adv</i>	наугад, случайно

rare <i>a</i>	редкий, необычный, необыкновенный
rash <i>n</i>	сыпь, высыпание, эффлоресценция
ratio <i>n</i>	отношение, пропорция, коэффициент, соотношение
rauwolfia <i>n</i>	раувольфия
raw material	сырье
reattachment <i>n</i>	реплантация
recently <i>adv</i>	недавно
recovery <i>n</i>	выздоровление, восстановление
recreational <i>a</i>	развлекательный
red (dye) tripan	трипановый красный (гистологический краситель)
refer <i>v</i>	приписывать, объяснять; иметь отношение, объяснять (чем-либо), относить за счет (чего-либо), ~ to - относиться к
reference <i>n</i>	ссылка, сноска; справка;
<i>v</i>	находить по ссылке, справляться
refreshing <i>a</i>	освежающий
regardless <i>a</i>	не взирая на ..., не считаясь
rekindle <i>v</i>	вновь зажечь или разжечь
reliable <i>a</i>	надежный; прочный; заслуживающий доверия, достоверный
relieve <i>v</i>	облегчать, успокаивать
reluctant <i>a</i>	делающий что-л. с неохотой, неохотный, вынужденный (о согласии и т.п.)
remain <i>v</i>	оставаться
remedy <i>n</i>	лекарство, средство от болезни
render <i>v</i>	воздавать, платить, отдавать; оказывать помощь
require <i>v</i>	требовать
resemble <i>v</i>	походить, иметь сходство
response <i>n</i>	ответ, реакция
responsible <i>a</i>	ответственный
restore <i>v</i>	восстанавливать
revive <i>v</i>	возрождаться, пробуждаться, воскрешать; приходить в себя, в сознание
route <i>n</i>	способ применения (лекарственного средства); токсикологический путь поступления (вещества) в организм
rub <i>n</i>	трение; натирание, растирание;
<i>v</i>	втирать (мазь) (in)

rubber <i>n</i>	резина, каучук
rubella <i>n</i>	(корева́я) красну́ха
S	
safety <i>n</i>	безопасность, надежность, сохранность;
<i>a</i>	предохранительный, безопасный
sample <i>n</i>	образец, образчик; проба; шаблон, модель;
<i>v</i>	отбирать образцы; пробовать, испытывать
sap <i>n</i>	сок растения, живица
satisfy <i>v</i>	удовлетворять
saucepan <i>n</i>	кастрюля
scale <i>n</i>	масштаб, соотношение
scourge <i>n</i>	бич, бедствие, кара
screening <i>n</i>	отсев, отбор
scrutiny <i>n</i>	исследование
scurvy <i>n</i>	цинга
seal <i>v</i>	герметически закрывать
search <i>n</i>	поиск; исследование, изыскание;
<i>v</i>	(for) - искать, (out) - разыскивать, найти
security <i>n</i>	безопасность, надежность
sedation <i>n</i>	воздействие седативным средством; седативный эффект
seek <i>v</i> (sought)	искать, разыскивать
seize <i>v</i>	хватать, схватить; (<i>обыкн. pass.</i> охватить, обуять (with)) отбирать
select <i>v</i>	отбирать
semisolid <i>n</i>	полутвердое вещество;
<i>a</i>	полутвердый
sepal <i>n</i>	<i>бот.</i> чашелистик
setting <i>n</i>	окружение, окружающая обстановка
settle <i>v</i>	поселиться, обосноваться; отстаиваться, осаждаться
share <i>n</i>	доля, часть; участие
shift <i>n</i>	изменение, перемещение, сдвиг; смена, перемена, чередование;
<i>v</i>	перемещать(ся); передвигать(ся); передавать (другому)
shingles <i>n</i>	опоясывающий лишай
shortening <i>n</i>	жир, добавляемый в тесто для рассыпчатости
short-term <i>a</i>	краткосрочный
shunt <i>n</i>	шунт, (обходной) анастомоз; сброс крови (жидкости)

sick <i>a</i>	больной
sick-leave <i>n</i>	отпуск по болезни
sickness <i>n</i>	болезнь, заболевание, тошнота
side-effect, adverse effect	побочное действие
significant <i>a</i>	значительный, важный, существенный
simmer <i>v</i>	кипятить на медленном огне
simplify <i>v</i>	упрощать
sip <i>v</i>	пить маленькими глотками; пробовать
site <i>n</i>	местоположение, местонахождение;
<i>v</i>	располагать, выбирать место
smallpox <i>n</i>	оспа
snakeroot <i>n</i>	кирказон (<i>лам. Aristolochia</i>)
sneezing <i>n</i>	чиханье
snuff <i>n</i>	нюхательный табак или порошок;
<i>v</i>	вдыхать, нюхать табак
soak <i>v</i>	пропитывать(ся), погружать в жидкость
software <i>n</i>	программное обеспечение, программные средства
solid <i>n</i>	твердая частица;
<i>a</i>	твердый, плотный, однородный
sound <i>v</i>	звучать; казаться
spasmodic <i>a</i>	спазматический
spearmint <i>n</i>	<i>бот.</i> мята курчавая (<i>лам. Mentha spicata</i>)
species <i>n</i>	вид
specify <i>v</i>	точно определять, устанавливать; указывать, отличать
spinach <i>n</i>	<i>бот.</i> шпинат (<i>лам. Spinacia oleracea</i>)
spineless <i>a</i>	<i>бот., зоол.</i> , не имеющий колючек или игл
spiritual <i>a</i>	духовный, святой, церковный
sprains <i>n</i>	растяжение связок
squeeze <i>v</i>	выжимать(ся), выдавливать
stability <i>n</i>	устойчивость
stage <i>n</i>	стадия, этап, период
stalk <i>n</i>	стебель, черенок; <i>зоол.</i> ножка
starve <i>v</i>	голодать, морить себя голодом
steal <i>v</i>	воровать, красть
stearic acid	стеариновая кислота
steep <i>v</i>	погружать (в жидкость); пропитывать
still <i>v</i>	перегонять, дистиллировать
stimulate <i>v</i>	стимулировать

stimulate	v	стимулировать
strain	v	процеживать(ся), фильтровать(ся)
strangle	v	задушить, задыхаться
strichnos nux vomica		чилибуха (<i>рвотный орех</i>)
strike	v (struck)	ударять (ся), бить
stroke	n	удар, паралич
strophanthus	n	строфант
study	n	изучение, исследование; наука, область науки; blind " слепой метод исследования; randomized " метод слепого отбора, безвыборочный метод
stiffness	n	заложенность носа (при простуде)
stupor	n	оцепенение, остолбенение; <i>мед.</i> ступор
subject	n	субъект, человек;
	v	подчинять, покорять; подвергать (воздействию, влиянию)
submit	v	представлять на рассмотрение
subsequent	a	последующий
subsequently	adv	впоследствии, затем, потом
substitute	n	замена, заместитель
subtle	a	тонкий, нежный, неуловимый
succeed	v	достигать цели, преуспевать (in); иметь успех
suffer from	v	страдать от чего-л., страдать по какой-л. причине
sufferings	n	страдания
sufficient	a	достаточный
	n	достаточное количество
suggestion	n	предложение
suit	n	набор, комплект
supplement	n	добавление, дополнение
support	n	поддержка;
	v	поддерживать, способствовать
surge	n	всплеск, толчок, выброс; пульсация.
	v	пульсировать, нарастать (о чувстве)
surpass	v	превосходить, превышать
survey	n	обзор, обследование
survival	n	выживание
susceptibility	n	восприимчивость, чувствительность
sustain	v	поддерживать; защищать; претерпевать, переносить
swear	n	клятва, присяга;
	v	давать клятву; ~ by постоянно обращаться к чему-либо; ~ to давать зарок

sweating *n* потение, потоотделение;
a потеющий, потогонный

Т

tank *n* цистерна, бак, резервуар
 tannin *n* танин
 tar *n* смола, деготь, гудрон;
v мазать дегтем, смолить
 target *n* цель, мишень; контрольная цифра;
attr. плановый
 teapot *n* чайник для заварки
 thorn-apple *n* *bot.* дурман вонючий (*лат. Datura stramonium*)
 thyme *n* *bot.* тимьян, чабрец (*лат. Thymus*)
 tincture *n* тинктура, настойка; привкус, примесь;
 tinnitus *n* звон в ушах
 tiredness *n* усталость, утомление
 tissue *n* ткань
 tolerance *n* терпимость, выносливость
 tolerate *v* переносить (лекарственные средства)
 toll *n* потери
 topical *a* местный, имеющий лишь местное или временное значение
 toss away *v* отбрасывать, швырять
 transmit *v* передавать; отправлять, посылать
 trauma *n* травма
 tremor *n* дрожание, дрожь
 trendy *a* имеющий тенденцию
 trial *n* испытания, проба
 twilight *n* сумерки, полумрак; *attr.* сумеречный, неясный;
 ~ sleep – полусон

У

ulcer *n* язва
 ulceration *n* образование язвы; язва, язвы
 ultimate *a* конечный, отдаленный
 unconscious *a* бессознательный, невольный, нечаянный
 undertake *v* предпринимать
 undoubtedly *adv* несомненно, бесспорно
 unsettling *a* тревожный
 untoward *a* неблагоприятный

uptake	<i>n</i>	поглощение, усвоение;
	<i>v</i>	поглощать, усваивать
urticaria	<i>n</i>	крапивница
utilize	<i>v</i>	использовать

V

valid	<i>a</i>	действительный, имеющий силу
value	<i>n</i>	ценности
vasoconstrictor	<i>n</i>	сосудосуживающий фактор, вазоконстриктор;
	<i>a</i>	сосудосуживающий
vasodilator	<i>n</i>	сосудорасширяющий фактор, вазодилататор;
	<i>a</i>	сосудорасширяющий
vast	<i>a</i>	обширный, громадный, многочисленный
versatile	<i>a</i>	непостоянный, универсальный, многоцелевой
versus	<i>prep.</i>	<i>лат.</i> против; в противовес, в сравнении с
vertigo	<i>n</i> (<i>pl. -os</i>)	головокружение
viable	<i>a</i>	жизнеспособный
violet	<i>n</i>	фиалка (<i>лат. Viola</i>)
virtually	<i>a</i>	фактически, в сущности
vivisection	<i>n</i>	вивисекция, живосечение (в эксперименте)
volunteer	<i>n</i>	доброволец, волонтер
vomiting	<i>n</i>	рвота
vulnerable	<i>a</i>	уязвимый, ранимый

W

warning	<i>n</i>	предупреждение
wax	<i>n</i>	воск
weave	<i>n</i>	<i>перен.разг.</i> сочинять
weed	<i>n</i>	дикорастущее растение
well-being	<i>n</i>	здоровье, благополучие, благосостояние
whooping cough		коклюш
willow	<i>n</i>	ива
willow-herb	<i>n</i>	кипрей узколистый; иван-чай
withdraw	<i>v</i>	забирать, отзывать, уходить, удаляться
withdrawal	<i>n</i>	синдром отмены
worm	<i>n</i>	червяк, червь, глист
worry	<i>n</i>	беспокойство, тревога, забота
wound	<i>n</i>	рана, ранение;
	<i>v</i>	ранить, причинять боль
wrap	<i>v</i>	завертывать
writing	<i>n</i>	писание; документ

Yyam *n**бот.* ямс, бататyeast *n*

дрожжи, закваска

yew *n**бот.* тис (*лат. Taxus*)yield *v*

производить, приносить, давать (плоды, доход);

n

выход, результат

Zzip *v*

потягивать, прихлебывать

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ДЛЯ СТУДЕНТОВ ФАРМАЦЕВТИЧЕСКОГО
ФАКУЛЬТЕТА**

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