ПОСОБИЕ
по
английскому
языку

Допущено Главным управлением учебных заведений Министерства здравоохранения СССР в качестве учебного пособия для студентов медицинских институтов

Киев
Головное издательство издательского объединения «Вища школа»
1980

Учебное пособие по английскому языку состоит из девяти разделов (Sections): I. The Public Health Service; II. Physiology; III. Therapy; IV. Surgery; V. Oncology; VI. Pharmacology; VII Toxicology; VIII. Stomatology; IX. Infectious Diseases.

Каждый урок (Unit) включает тексты из соответствующего раздела медицины, которые отобраны из новейших английских и американских медицинских журналов, монографий и других источников, из систем предметных и постпредметных упражнений, способствующих накоплению терминологического минимума, необходимого для чтения и понимания медицинской литературы на английском языке, а также выработке творческих навыков работы над текстом: умение составить краткую аннотацию, резюме по теме, выделить из текста предложения или целые отрывки, передающие основную идею текста, озаглавить отдельные абзацы и т. д.

В приложении к пособию даны: 1) латинские и греческие термины, встречающиеся в английской научной медицинской литературе; 2) словообразовательные элементы; 3) сокращения, принятые в английской научной медицинской литературе.

Для студентов 3—4 курсов медицинских институтов.

Редакция литературы по иностранным языкам
Зав. редакцией М. М. Азаренко
ПРЕДИСЛОВИЕ

Учебное пособие по английскому языку предназначено для студентов 3—4 курсов медицинских институтов, изучающих английский язык в объеме 160 часов. Оно может быть использовано также аспирантами и практическими врачами, продолжающими изучать английский язык самостоятельно.

Цель пособия — научить студентов на основе накопленного на первом и втором курсах запаса знаний работать над оригинальными научными текстами по специальности и извлекать из них медицинскую информацию. При подборе материалов для пособия авторы руководствовались целевой установкой программы по иностранным языкам для незвуковых вузов.


Пособие состоит из 9 разделов (Sections) и включает 46 уроков (Units): I. The Public Health Service; II. Physiology; III. Therapy; IV. Surgery; V. Oncology; VI. Pharmacology; VII. Toxicology; VIII. Stomatology; IX. Infectious Diseases.

Каждый урок состоит из предтекстовых упражнений, основного текста, дополнительных текстов и послетекстовых упражнений.

Предтекстовые упражнения носят тренировочный характер и посвящены работе над медицинской лексикой и терминологией текста, а также встречающимися в тексте грамматическими явлениями.

Предтекстовые упражнения включают упражнения на запоминание медицинских терминов, подбор русских эквивалентов к английским словосочетаниям, образование новых слов, используя данные словообразовательные элементы (префиксы, суффиксы, терминологические); анализ состава сложных терминов; нахождение в тексте тех или иных грамматических форм и способы их перевода на русский язык; подбор терминов к данным дефинициям и т. д.
Особое внимание следует уделить упражнениям на слообразование. Усвоение правильно отобранных 300 терминов, префиксов и суффиксов позволяет ориентироваться, а иногда и точно знать значения 15000 медицинских терминов. Это один из факторов рационализации методики изучения терминологии.

В предтекстовые упражнения включены также задания на повторение грамматических явлений, характерных для научной медицинской литературы: неопределенно-личные и пассивные конструкции, распространенные ордепления, инфинитивные обороты, придаточные предложения и т. д. Выполняя все предтекстовые упражнения, необходимо прочитать основной текст — его понимание и переведение теперь не представляют особой трудности. Затем нужно перейти к выполнению послетекстовых упражнений; фактически в них и заключается вся работа над текстом.

Послетекстовые упражнения носят творческий характер и способствуют выработке навыков извлечения медицинской информации из прочитанного текста. Это вопросы о целях работы; выделение из текста предложений или целых фрагментов, содержащих основную информацию; озаглавление отдельных абзацев; составление плана текста; написание краткой аннотации по теме; составление резюме; передача в сжатой форме основного содержания текста и т. д.

В каждом уроке даются 1—2 дополнительных текста для синтетического чтения. Эти тексты близки по своему содержанию к основному тексту, но не по объему, но проще по лексико-грамматической структуре и не представляют большой трудности для работы.

Предтекстовые упражнения рекомендуется выполнять самостоятельно, а послетекстовые — в аудитории под руководством преподавателя.

В приложении к пособию даны: 1) латинские и греческие термины, встречающиеся в английской научной медицинской литературе; 2) слообразовательные элементы: суффиксы, префиксы, терминологические; 3) сокращения, принятые в английской научной медицинской литературе. Они предназначены для активного усвоения.

Пособие преследует не только образовательную, но и воспитательную цель. Широко освещаются достижения отечественной медицины, перспективы ее развития. Приводится сравнение с состоянием здравоохранения и медицинского обслуживания в капиталистических странах, освещается помощь Советского Союза развивающимся странам в области здравоохранения, а также сотрудничество СССР с зарубежными странами в области здравоохранения и медицины.

После проработки материала пособия студенты будут иметь возможность самостоятельно читать и переводить медицинскую литературу на английском языке, вести беседу по специальности в пределах изучаемой лексики.
SECTION I
Public Health Service
UNIT 1

Texts: 1. Prospects of the Development of Public Health in the USSR
Word-Building Elements: Suffixes: -ion and -ous.
Grammar: The Indefinite Tense Forms.

Pre-Text Assignments

1. Learn the following words and word combinations:
   Longevity [lon’dʒeviti] продолжительность жизни
   To increase longevity is one of the principal tasks of Soviet medicine.
   Facet [’fæsit] аспект
   The social facets of the Soviet public health were formulated by
   V. I. Lenin long before the Great October Socialist Revolution.
   Health-building оздоровительный
   A wide network of health-building institutions has been created in
   our country during the years of Soviet power.
   Prophylaxis [,prəfi’læksis] профилактика
   Prophylaxis is the main demand of Soviet medicine.
   Mortality [mɔ:’tælitɪ] смертность
   Child mortality is the lowest in the USSR.
   Maternity [mæ’tə:nəti] материнство
   Maternity home родильный дом
   There are hundreds of maternity homes and children’s hospitals in
   our country.

11. Form nouns adding the suffix -ion and adjectives adding the suffix -ous. Memorize
    the meanings of new words.
    Model: prevent — prevention предупреждение
    poison — poisonous ядовитый
    a) -ion: translate, radiate, direct, reflect, constitute, adopt, inject,
       conduct, connect, calculate, instruct;
    b) -ous: fibre, vena, vigor, bromine, acid, thymus.

III. Analyze the following terms:
    child-birth, electro-encephalogram, radio-electronics, cardio-vascular,
    gastro-intestinal.
IV. Match the following English word combinations with the Russian ones:
1. child mortality 1. родильный дом
2. social facets 2. злокачественная опухоль
3. maternity home 3. социальные аспекты
4. malignant tumour 4. эффективное лечение
5. effective treatment 5. детская смертность

V. Put in the required words from those given in the right column:
1. To increase ... is one of the main principles of 1. mortality
   Soviet Public Health.
2. Child ... has decreased to the utmost in our 2. mother
country.
3. ... is the basis of Soviet medicine. 3. facets
4. The Soviet state takes care of ... and child wel-
   fare. 4. longevity
5. The social ... of Soviet Public Health are expres-
   sed in the Medical Law of the USSR. 5. prophylaxis.

VI. Find substitutes for the following word combinations:
1. to make a diagnosis 1. to inject
2. relating to blood vessels 2. morbidity
3. to give injections 3. mortality
4. condition of being diseased 4. vascular
5. the number of deaths 5. to diagnose

VII. Transform into Past and Future Indefinite:

Pattern: The therapist prescribes the patient a course of treat-
ment.
The therapist prescribed the patient a course of treat-
ment.
The therapist will prescribe the patient a course of treat-
ment.

1. The Soviet public health bodies take great care of providing
   healthful working and living conditions for the people. 2. Breathing fresh
   air helps much in recovering from any disease. 3. The article deals with
   the therapeutic use of antibiotics. 4. Soviet surgeons perform open heart
   operations. 5. The patient undergoes a special course of treatment at the
   hospital. 6. Scientists penetrate into the secrets of nature. 7. He trains
   himself to discretion and patience.

VIII. Transform into the interrogative form:

Pattern: The patient feels better after the operation.
Does the patient feel better after the operation?

1. A nurse comes to the patient to give him penicillin injections.
2. A physician listens to the patient’s heart and lungs and measures his
   blood pressure. 3. The nurse takes the patient’s temperature. 4. The pro-
   fessor wrote many scientific works. 5. Social facets of Soviet Public
   Health are reflected in the Medical Law and the Constitution of the
   USSR.
PROSPECTS OF THE DEVELOPMENT
OF PUBLIC HEALTH IN THE USSR

«The socialist state is the only state which undertakes to protect and
continuously improve the health of the whole population. There will
be an extensive programme to prevent and reduce diseases, eradicate
infectious diseases and further increase longevity», says the Programme
of the Communist Party of the USSR.

In the USSR during the 60 years of Soviet power a perfect and demo-
cratic system of Public Health has been created. Social facets of this
system formulated by V. I. Lenin long before the Great October Social-
list Revolution are: state character, planned development, free and
available to everyone health service, prophylactic trend, the union of
theory and practice. Socialist principles of Soviet Public Health are
reflected in the Medical Law and the Constitution of the USSR. Article
42 of the Constitution of the USSR reads as follows:

«Citizens of the USSR have the right to health protection. The right
is ensured by the competent medical care rendered by state health insti-
tutions, extension of the network of medical and health-building institu-
tions, ... by furtherance of scientific research directed to preventing and
reducing the incidence of diseases, and to ensuring a long active life for
citizens».

Prophylaxis is the basis of Soviet medicine. Every year a great num-
ber of the population are examined to discover diseases in the early stage.
The medical assistance is rendered to the population free of charge. All
tests are free, beginning with laboratory tests and X-ray examination
to electroencephalograms and even more complex tests. Treatment at
the hospitals and medical services during child-birth are also free.

According to the long-term plan for the development of Public Health
of the USSR in 1980 the total number of doctors of all specialities will
grow up to 958,000. Every year 35,000 students will graduate from me-
dical institutes and join the great army of Soviet doctors.

The Central Committee of the Communist Party of the USSR and the
Council of Ministers have worked out effective measures for improve-
ment of the health service in the country as a whole. By the end of the
Five-year plan the medical supplies industry is to increase its output
of medicines, medical instruments and equipment 3,5 times. There will
be considerable improvement in medical equipment involving radio-
electronics and nuclear physics as well as diagnostics apparatus and
surgical instruments. Now the attention of the Academy of Medical
Sciences and a great number of research institutions of the country
is concerned with the solution of highly important problems of the
health service such as a further cut in the child mortality, and ensuring
mother and child welfare, the discovery of ways and measures for treat-
ment and prevention cardio-vascular diseases; determination of the
causes of cancer and other malignant tumours and research on their pre-
vention and effective treatment.
Post-Text Assignments

I. Skim through the text and find the key sentences.
II. Read the text closely and answer the following questions:

1. What does the Programme of the Communist Party of the USSR say about health protection system in our country? 2. What system of Public Health has been created in our country during the years of the Soviet power? 3. What is the basis of Soviet medicine? 4. In which documents are the socialist principles of our Public Health reflected? 5. What are the main tasks and principles of the Soviet Public Health? 6. Must the Soviet people pay for treatment in hospitals and polyclinics? 7. Is medical assistance free of charge in capitalist countries? 8. What has been written in Article 42 of the Constitution of the USSR?

III. Read, translate and retell the following text:

BETTER SOVIET HEALTH CARE

More and more attention has been given lately to cardio-vascular diseases, because the life span of Soviet people has increased and corresponding changes in the age pattern of the population have taken place. Next year a new cardio-vascular service will be established to offer better treatment to sufferers from cardio-vascular diseases and, in particular, those suffering from an infarction of the myocardium. The service will begin with hospital treatment and be followed by convalescence in a sanatorium. After this the patient will be under the constant care of the outpatient clinic near his house.

The CPSU Central Committee and the USSR Council of Ministers are showing their concern for improved medical science and for training personnel, and are planning to increase the material incentives for medical workers, including additional payments to district and rural doctors, and also to doctors working in the emergency and ambulance services in the form of monthly increments for long service and three day leaves, etc. Furthermore, the honorary title of «People’s Doctor of the USSR» has been instituted.

The public health services in the Soviet Union embrace the entire population and are financed by the state budget. All sanatoriums are outfitted with the latest medical equipment. Balneological treatment and baths, diabetic feeding and vitamin therapy are extensively employed. Main emphasis in the USSR is laid on prevention or prophylaxis. The saying has it that: «An ounce of prevention is worth a pound of cure».

UNIT 2

Texts: 1. Diseases Must Be Defeated.
2. For the People’s Health.
Word-Building Elements: Suffixes -ful and -less.

Pre-Text Assignments

1. Learn the following words and word combinations;
Artificial [,aːtɪˈfɪʃəl] искусственный
All ambulances are equipped with artificial respiration apparatuses.

Immunity [ɪˈmjuːnitɪ] иммунитет
Artificial immunity is acquired as a result of prophylactic vaccination.

Communicable [kəˈmjuːnikəbl] заразный
Such dangerous communicable diseases as the plague, cholera, malaria have been swept out in the USSR.

Obliterate [əˈblɪtəreɪt] уничтожать
Malaria has completely been obliterated in many countries of Europe and Asia.

Debilitating malady [dɪˈbɪlɪtɪtɪŋ] изнуряющая болезнь
The patient suffered from the most debilitating malady of our time — jaundice.

Heredity [hɪˈredɪti] наследственность
The study of heredity and hereditary diseases is a very important task of medicine.

II. Form new words adding the suffixes -ful and -less. Define the part of speech and translate:

Model: use — useful (a) полезный
use — useless (a) бесполезный

Harm, use, help, power, pain, child, hope, blood, breath, rest, sleep.

III. Analyze the following terms:

psychoneurology, gammaglobulin, psychosomatic, hepatocellular, encephalogram.

IV. Match the following English word combinations with the Russian ones:

1. preventive measures 1. заразная болезнь
2. communicable disease 2. злокачественная опухоль
3. malignant tumour 3. вызванный бактериями
4. caused by bacteria 4. эпидемический гепатит
5. epidemic hepatitis 5. профилактические меры

V. Put in the required words from those given in the right column:

1. Such grave ... diseases as the plague and cholera have been swept out in the USSR. 1. life-span
2. The average ... in the USSR is 75 years. 2. artificial
3. Jaundice is the most ... malady of our time. 3. immunology
4. ... immunity is acquired as a result of prophylactic vaccination. 4. communicable
5. ... is the branch of medicine studying immunity. 5. debilitating

VI. Find substitutes for the following word combinations:

1. treatment by radiation 1. virology
2. a specialist in communicable diseases 2. radiotherapy
3. the duration of life of a man 3. life-span
4. the study of viruses 4. infectionist
5. preventive measures 5. prophylaxis
DISEASES MUST BE DEFEATED

Soviet scientists are working hard to free man from diseases. They have at their disposal considerable experimental facilities of over 300 research institutes headed by the Academy of Medical Sciences. A number of new research institutes of biological research and artificial immunity, psychoneurology and biochemistry of hormone were founded during the Tenth Five-Year Plan period. A large institute of medical radiology was built in Moscow. It studies the influence of radiation upon the human organism and the use of isotopes in the treatment of malignant tumours. Two big cancer institutes began functioning in Leningrad. A number of such institutes are to be opened in various union republics of our country.

Within half of the life-span of one generation Soviet doctors eradicated many grave communicable diseases. The long list of those infectious diseases includes plague, smallpox, cholera, recurrent typhus and this list grows from year to year. Malaria has completely been obliterated, a grave and debilitating malady which darkened the lives of tens of thousands of people not so long ago. A vigorous offensive has been launched against tuberculosis, alimentary infections and other diseases.

Science has armed doctors with reliable means of preventing and treating many infections caused by bacteria. It is expected that diphtheria will soon be under control, too. A much more difficult problem is the control of infections caused by viruses, influenza, for instance. Unfortunately we still do not possess sufficiently effective means of treating these diseases. The vaccines that are being developed (mainly in our country) require additional study. Or take measles. Practically all children catch it. Gammaglobulin, a means of passive prevention, develops a shortterm immunity and the child is open to infection after a certain period. It is true that the disease in this case would take a milder course. This is a step forward, but there are still many problems to be solved. The same is true about epidemic hepatitis, which has not been adequately studied so far. This is why the problem of viruses as causative agents in a number of infectious diseases will be the subject of profound research.

There are many other problems facing the medical science, for instance, the study of heredity, combatting malignant tumours and cardiovascular diseases.

A profound knowledge of the laws of biology is an indispensable condition for successful development of medicine.

Post-Text Assignments

I. Skim through the text and speak about the infectious diseases eradicated in our country.

II. Read the text closely and answer the following questions:

1. What facilities do Soviet scientists possess to free man from diseases? 2. What new research institutes have been built in the USSR during the Tenth Five-Year Plan period? 3. What problems do the cancer institutes study and solve? 4. What dangerous infectious diseases caused by
bacteria can you name? 5. What is an indispensible condition for successful development of medicine?

III. Read, translate and retell the following text:

FOR THE PEOPLE'S HEALTH

The problem of care of the health of the working people attracts great attention of the Communist Party and the Soviet Government. Long before the Great October Socialist Revolution V. I. Lenin stressed the necessity of solving the problems of public health service. The Communist Party insisted on the limitation of the working hours, introduction of an hour break and social insurance of the workers.

After the Great October Socialist Revolution over a hundred decrees on the organization of public health were signed by V. I. Lenin. Many of those decrees had not only practical but also a political significance. The policy of the Communist Party and the Soviet Government towards the care of public health was reflected in them. V. I. Lenin considered the care of public health to become one of the main functions of the Soviet state. He believed that the medical services in our country had to be based on the principle of qualified medical aid available for everybody and free of charge. The victory of the Great October Socialist Revolution in 1917 had created the possibility of setting up health services, of providing medical care for the whole population.

The fundamental principle of Soviet health protection system is the prevention of diseases. Prophylaxis is a part of a state policy, it includes a planned system of economic and sanitary-hygienic undertakings arranged by the state. The state measures for improvement of the material and cultural standards of the population, the reduction of working hours and improvement of labour and living conditions are of great importance for the prevention of diseases.

The People's Commissariat of Public Health, created in 1918 under the guidance of V. I. Lenin, became the first state organ in the world which took up on itself the responsibility of health protection. M. A. Semashko was the first People's Commissar of Public Health. V. I. Lenin always paid much attention to the work of the People's Commissariat of Public Health. In 1920 the Second All Russian Congress of medical men took place in Moscow. At this Congress V. I. Lenin delivered a report in which he called on medical men to make great effort in the struggle for the health of the population, to fulfil the main rule of the Soviet Public Health—prophylaxis of diseases. This is the principal difference of the Soviet system of Public Health from that in capitalist countries. Only in the Soviet Union it became possible to care for each person's health through all his life.

According to the decisions of the 25th Party Congress the need of the urban and rural population in different kinds of highly qualified medical aid must be fully satisfied.

IV. Discuss the reading material according to the following plan:

1. V. I. Lenin’s attitude to the problem of Public Health service.
2. The Communist Party’s demands in the field of Public Health.
3. Prophylaxis as the main principle of Soviet Public Health.
4. Implementation of V. I. Lenin’s behests.

UNIT 3

| Texts: 1. Medical Care of Mother and Child.  |
| Word-Building Elements: Suffix -itis. |

Pre-Text Assignments

I. Learn the following words and word combinations:

Delivery [dr’iværri] роды
Pregnant women must attend special lectures and talks about delivery.

Predetermine [‘pri:dr’tə:min] предопределять
Physical and moral factors largely predetermine delivery.

Upbringing [‘ʌp’brɪŋɪŋ] воспитание
Baby care and upbringing is the most important task of a woman.

Maternal mortality материнская смертность
Over the past 20 years maternal mortality in the USSR dropped more than 50 per cent.

Infantile ['ɪnfəntɪl] детский, младенческий
Such grave infantile diseases as smallpox and rickets have been stamped out in our country.

II. Translate the following terms. Memorize the meaning of the suffix -itis воспаление:

Model: bronchitis бронхит, воспаление бронхов.
peritonitis, pharyngitis, meningitis, endocarditis, otitis, appendicitis, conjunctivitis, dermatitis, encephalitis, neuritis, peritonitis, stomatitis, tonsillitis.

III. Analyze the following terms:

pediatrician, maternity, infantile, dermatitis, cardiology, cytology, intramuscular, postoperative, postmortem, mortality.

IV. Match the following English word combinations with the Russian ones:

1. infantile mortality 1. стационарное отделение
2. in-patient department 2. детская смертность
3. woman in childbirth 3. профилактические меры
4. preventive measures 4. роженица
5. child advisory centre 5. детская консультация

V. Find substitutes for the following word combinations:

1. the branch of medicine dealing with children’s diseases 1. maternal
2. pertaining to an infant or to infancy 2. pediatrics
3. the branch of medicine dealing with pregnancy and labour
4. a state of being pregnant
5. pertaining to a mother

3. obstetrics
4. infantile
5. pregnancy

MEDICAL CARE OF MOTHER AND CHILD

Specialized medical care is given to the baby beginning with its first day of life at Soviet in-patient and polyclinic establishments for children. With this in mind, a special obstetrical-gynaecological and pediatric service has been established in every Union and Autonomous Republic. By the beginning of 1977 the country had more than 225,000 beds for pregnant women and women in childbirth, which made it possible to take care of all deliveries in hospital conditions and give the new mother proper and timely medical assistance.

The health of the future child depends greatly upon the mother's state of health, proper regimen, timely prevention measures and overall physical preparation for delivery. A warm, attentive attitude towards the expecting mother on the part of gynaecologists, talks and lectures about baby care and upbringing, as well as specialized medical procedures, largely predetermine the state of children's health. Therefore Soviet medical science devotes utmost attention to the health of mother and child.

At present all mother and child health advisory centres conduct disease prevention and cure work. Over the past 20 years maternal mortality in the USSR dropped more than 50 per cent, and infantile mortality more than 72 per cent. This comes from the tremendous efforts of Soviet scientists.

The Communist Party and the Soviet Government devote constant attention to questions of mother and child care and facilitate the growth of medical establishments. At present there are 22 research institutes for pediatrics, obstetrics, gynaecology and mother and child care, 138 chairs of obstetrics and gynaecology at medical institutes, universities and institutes of advanced studies for doctors. Their research and methods of treatment and the progress made in controlling infantile infectious diseases facilitated a drop in mortality.

Post-Text Assignments

I. Skim through the text and choose the sentences expressing the Soviet Government's attitude to the health of pregnant women and new-born children.

II. Read the text closely and define the main subject of each paragraph.

III. Entitle each of the four paragraphs of the text using the active vocabulary of the unit.

IV. Discuss the reading material using the following questions:

3. the science dealing with the study of the blood 3. healing
4. excision of one half of the stomach 4. lipoxidema
5. fatty acid in the blood 5. hemigastrectomy

VI. Read and translate. Pay attention to the ways of expressing modality:

Pattern: I. P. Pavlov had to experiment much to study digestive system in details.

И. П. Павлову пришлось много экспериментировать, чтобы детально изучить пищеварительную систему.

1. Medical institutes must prepare excellent specialists to work in different fields of medicine. 2. The students had to work hard to pass their state examinations successfully. 3. Ambulance doctors must have good knowledge in different fields of medicine. 4. You should better go to the doctor who had already seen you. 5. The patient had to spend two months at the sanatorium to build up his health. 6. The nurse is to hurry to the patient to give him an injection.

**MEDICAL CARE AT HOME**

The medical home service is one of the pillars of the Soviet health protection system. It is centred on polyclinics — the most numerous type of medical establishments. They provide medical assistance, follow-up services for chronic cases and screening for the early detection of various diseases, and so on.

The pivotal post at every polyclinic is occupied by the district therapist. This doctor caters to the residents of a certain area, usually three or four thousand residents. The district therapist is a real family doctor. Whenever summoned he calls on the patient, examines him or her at home, gives a diagnosis and prescribes the necessary treatment. He continues to call on the patient afterwards, checks on his state of health, and if necessary changes the treatment. The district doctor also makes regular visits to chronic patients or those who are registered as follow-up cases with a specialized clinic.

Besides the district doctors, every polyclinic has on its staff other specialists, such as surgeons, ear, nose and throat specialists, neuropathologists, ophthalmologists, dermatologists, stomatologists and others. Each has his own examination room. The polyclinic has a laboratory and in many cases rooms for the examination of contagious diseases, cardiorheumatological and endocrinological rooms, special rooms for teen-agers, and also rooms for treatment and diagnostics, X-ray and physiotherapy sections. If it is necessary the specialist doctors can participate in treating a patient at home.

The home service for children is arranged on the same pattern. They receive the necessary medical assistance from district pediatricians and specialists on the staff of children's polyclinics.

Late in the evening and at night, the medical home service is rendered by special centres of emergency medical aid. These are based on one or several polyclinics in a given area. The doctors on duty are experienced
physicians who are assisted by feldshers and nurses. They have at their command a sufficient number of motor vehicles and all the necessary instruments. In the morning the physicians of the emergency aid centres inform the district therapeutists and pediatricians of all new cases, their priorities, and where specialists' consultations are necessary.

Whenever immediate medical aid is essential, as in sudden onsets of appendicitis, bleeding, brain hemorrhage, heart attack, or serious injuries, the ambulance service goes into action. The physicians of the ambulance service reach the patient at home within a few minutes after the summons, and immediately render assistance, or take the patient to hospital. Not infrequently specialized medical crews arrive, such as cardiological, shock control, neurological, toxicological, and so on.

Medical home service, just like all medical services in the USSR, is free. The entire Soviet public health system is state-maintained.

Post-Text Assignments

I. Skim through the text and define its main idea.

II. Read the text closely paragraph after paragraph and define the main subject of each paragraph.

III. Write all the medical terms out of the text and learn them.

IV. Discuss the text using the following plan:
   1. The most numerous type of medical establishments.
   2. The work of a district therapeutist.
   3. Specialized medical assistance.
   5. Emergency medical aid centres.
   6. Ambulance service.

V. Read, translate and retell the following text:

MEDICAL CARE
AT THE SPECIALIZED ESTABLISHMENT

Until that fateful autumn Saturday, Alexei L. had never complained of ill health.

... On that evening, his wife rang for an ambulance. She was frantic with worry. The doctor found his condition critical. Sharp pains in the left side of the chest made breathing difficult. The initially high arterial pressure suddenly dropped sharply. Medicines proved of no use. Within an hour, the doctor had to call in a special mobile resuscitation unit equipped to save the life of a heart attack case. The patient was in a state of collapse. He was taken to the Cardiology Institute. The duty doctor assessed the patient's condition at a glance and ordered him to the shock ward. «An extensive transmural-infarction», was recorded in his case record.

Four nurses and two doctors — almost the entire overnight shift of the department — busied themselves with one patient throughout that long night. The following day brought no relief. The fight for L. 's life
lasted 48 hours. Contractions recurred. Breathing gave cause for great concern. It took 70,000 litres of oxygen to sustain L.'s life during those 48 hours. L. stayed in the shock ward for 15 days. On the 16th he was transferred to a general ward. Over the period of treatment he took 36 different medicines, including some important from Hungary, Switzerland, the Netherlands, Poland and the FRG. After 60 days of treatment, he could walk unassisted and began to recover quickly.

VI. Make up 10 questions covering the reading material of the unit.

VII. Write a summary (a short report) of the reading material.

VIII. Compose a case report using the active vocabulary of the unit.

UNIT 5

2. Health for All by the Year 2,000.
Word-Building Elements: Suffixes -er, -or.

Pre-Text Assignments

1. Learn the following words and word-combinations:

Member-state — страна-участница
The USSR is a member-state of the World Health Organization.
To eradicate [ɪˈrɛdɪkət] искоренять
Many infectious diseases are eradicated in the USSR.
Sanitation [ˌsænɪˈteɪʃn] санитария
Improving sanitation and water supply is one of the forms of WHO activities.
Epidemic warning [ˌwɔːnɪŋ] предупреждение эпидемий
One of the main services carried out by WHO is the service of epidemic warnings.
Health authorities [ˈɔːθɔrətɪz] руководители медицинских учреждений
Much attention to the improvement of health of workers is paid by health authorities.

11. Form new words adding the suffixes -er, -or:

Model: to work — worker — рабочий
            to operate — operator — оператор
            to conduct, to research, to investigate, to do, to perform, to organize,
            to dream, to play, to produce.

111. Read and translate the following words with the suffix -al:

national, regional, tropical, special, viral, technical, international.

IV. Give Russian equivalents for the following word combinations:

epidemic diseases, international standardization, health protection, health service, outbreak of the disease, infectious diseases.
V. Find substitutes for the following word combinations:

1. the establishment of conditions favourable to health
2. liable to be communicated by infections
3. normal conditions of body and mind
4. attacking many patients in the same region at the same time
5. a highly contagious and fatal fever

VI. Translate the following sentences. Pay attention to the form of the verb in the Passive Voice:

Present Indefinite Passive

to be + Past Participle

| am | is | are | + Infinitive + -ed |

1. The patient is given first aid. 2. In the Soviet Union medical assistance is rendered to the population free of charge. 3. Penicillin is indicated in the treatment of different infections. 4. Special attention is devoted to mother and child welfare. 5. The child is vaccinated against smallpox. 6. The operation on the heart is preceded by various examinations, which enable the surgeon to make a correct diagnosis. 7. The injury is accompanied by bleeding. 8. Annually check-ups are made to reveal TB patients.

VII. Transform into Passive:

Pattern: The doctor applies a sterile gauze dressing on the patient's face.
A sterile gauze dressing is applied on the patient's face by the doctor.

1. The surgeon takes out the gauze drain soaked with pus. 2. Some bacteria cause diseases in plants and animals. 3. The doctor discharges the patient from the hospital. 4. The nurse takes the patient's temperature. 5. The students of our group carry out many interesting experiments.

WHO (WORLD HEALTH ORGANIZATION)

WHO was founded in 1948. In 1946 the United Nations held an International Health Conference in New York. There the Constitution of WHO was signed by 61 countries. Now there are 150 member-states. Membership is open to all countries.

WHO activities take many forms:
- strengthening national health services,
- preparing more and better health workers,
- controlling or eradicating epidemic diseases,
- protecting mother and child health,
- improving sanitation and water supply,
- and making all other efforts to raise health levels.
One of the main services carried out by WHO is the service of epidemic warnings. The five main world epidemics of history — plague, cholera, smallpox, typhus and yellow fever—are still a great danger in our time of fast sea and air travel.

WHO gathers information and broadcasts it daily by radio to health authorities, ports, airports and ships at sea. WHO also informs national health services about outbreaks of viral diseases such as influenza and poliomyelitis.

Besides an epidemic information WHO also provides services which are needed by all the countries, such as an international quarantine measures, world health statistics, international standardization of medicines and vaccines, development of medical research and technical publication programme.

The daily work of the World Health Organization is carried out by a medical and administrative staff of about 2,400 international officers from 70 different countries. These officers are stationed at headquarters in Geneva, in Regional Offices, or with special centers working on every continent.

Post-Text Assignments

I. Read and translate the text. Find sentences expressing the central idea of the text.

II. Skim through the text and answer the questions:

1. When was WHO founded? 2. How many member-states are there in WHO? 3. What are the most active forms of WHO activities? 4. How are national health services informed about outbreaks of viral diseases? 5. Do all countries need services provided by WHO? 6. Who performs the daily work of the World Health Organization?

III. Translate the following sentences. Pay attention to the words with ing forms:

1. Training of medical personnel is one of the most important problems of WHO. 2. Great stress is laid on eradicating of the most dangerous and wide-spreading diseases. 3. WHO is called upon to act as a navigator in coordinating the efforts of international scientists showing ways of setting these tasks. 4. The Soviet Union ascribes great importance to the broadening and strengthening of international cooperation, including the field of health protection.

IV. Speak on the following items:

1. The main tasks of WHO.
2. Service of epidemic warnings.
3. Administrative staff of WHO.

V. Read, translate and retell the text:

HEALTH FOR ALL BY THE YEAR 2000

(Dmitry VENEDIKTOV, Deputy Minister of Public Health of the USSR, gave an interview to Moscow News correspondent Hans VLADIMIRSKY about the World Health Organization (WHO) and the Soviet contribution to its work).
Q.: Tell please about WHO and its objectives.
A.: WHO is one of the largest UN specialized agencies. It was founded shortly after the Second World War, when on April 7, 1948, 26 UN member-states ratified its Charter thus making a new stage in international cooperation in the field of health.

Today WHO has 150 member-states and its 1977 budget is close on 150 million US dollars, its total staff exceeds 5,000 people from about 100 countries.

Q.: In keeping with its Constitution, WHO serves a humane objective — «... the attainment by all peoples of the highest possible level of health». How does the Organization work to this end?
A.: WHO acts as the central authority directing and coordinating international health work; it facilitates medical research, elaborates international standards and classifications, assists the adoption and observance of different international agreements on health, etc. WHO concerns itself with a variety of problems — control of diseases, including contagious ones, public health organization, human environment, training of medical personnel, pharmacology, toxicology, etc. In its work WHO relies on the knowledge, experience and the best expertise of many countries. WHO draws on the facilities of more than 200 research establishments throughout the world. It operates international and regional reference centres which are engaged in studying the most important health problems.

Q.: What is the most essential and typical in WHO work?
A.: The Organization is turning to tackle the real problems, those of a global character — control of cardiovascular diseases, malnutrition, epidemics and cancer... These are so real and grave that nothing short of joint multi-national effort can solve them. WHO is called upon to act as a navigator in coordinating the efforts of international scientists showing ways of setting these tasks. The developing countries have also been greatly aroused in this field. WHO has passed a number of important resolutions which concern them, like further research into tropical diseases and their control; assistance to developing countries. One of the gravest problems they face is shortage of their own personnel. The Soviet Union put forward a relevant resolution outlining the strategy for solving the problem.

Q.: How, in general, does the Soviet Union participate in WHO work?
A.: The Soviet Union ascribes great importance to the broadening and strengthening of international cooperation, including the field of health protection. Great efforts are made on the pressing need to eradicate the most dangerous and widespread diseases and the protection of the environment. The USSR is doing all in its power to settle these problems by its active participation in WHO.

VI. Write shortly about WHO and the Soviet Union participation in its work.
UNIT 6

Texts: 1. Higher Medical Education in the USSR.
2. Medical Education in the USA.
3. Negro Enrollment in Medical Schools.

Word-Building Elements: Suffixes -y and -al.

Grammar: Should as a Modal Verb.

Pre-Text Assignments

1. Learn the following words and word combinations:

To master [ˈmaːstə] овладеть, приобрести (специальность)

«Never proceed to the next step before you have mastered the preceding one», I. P. Pavlov said.

Fundamental [ˈfʌndəməntl] основа, фундамент

Future doctors must master the fundamentals of medicine.

Subinternship [ˈsəbɪntərniʃip] субординатура

All graduates must go through the subinternship.

To appoint [əˈpoint] назначать (на работу)

The best surgeon was appointed the head of the surgical department.

Work appointment назначение на работу, направление на работу

The six-year students will receive their work appointments at the end of June.

Service record стаж работы

My service record began five years ago when I had graduated from the institute.

2. Read and translate the following words. Remember that the suffix -y forms nouns, and the suffix -al forms adjectives:

-y: laboratory, quality, activity, density, recovery, electricity;
-al: medical, educational, additional, fundamental, theoretical, clinical, physical.

3. Match the following English word combinations with the Russian ones:

1. social science 1. законченное среднее образование
2. complete secondary education 2. курс обучения
3. the course of studies 3. стаж работы
4. service record 4. назначение на работу
5. work appointment 5. общественная наука

4. Give international and Russian equivalents of the following words:

Model: component — компонент, составная часть
general, course, definition, procedure, training, national, personnel, person, university, study, master, fundamental, theory, practice, system, social, clinic, analysis, extra, international, hospital, function, component, mixture.

5. Translate the following sentences with the verb «should» in modal meaning:

1. You should call in a doctor. 2. As mercury has a corrosive action on metals it should never be used to sterilize medical instruments.
3. Much fresh air should be secured in wards where patients with pulmonary diseases lie. 4. One should be very careful in taking strong effective drugs. 5. A man who was in contact with smallpox should be vaccinated.

**HIGHER MEDICAL EDUCATION IN THE SOVIET UNION**

In the Soviet Union doctors are trained either at medical institutes or at medical faculties of universities. The country has 92 medical institutes and 8 medical faculties at universities. Our country has the largest number of doctors in the world. Every year about 35 thousand doctors are trained in the USSR. All the Union Republics have their own higher medical educational establishments where national medical personnel are trained.

Every person having complete secondary education has the right to enter any institute or university. Those who wish to become doctors have to enter a medical institute. For this they must pass four entrance examinations in physics, chemistry, biology and the native language. Those who pass all the above-mentioned examinations successfully are admitted to the institute.

In all Soviet medical institutes the course of studies is six years. During these six years the student has to master all the fundamentals of theoretical and practical medicine. The Soviet system of training doctors differs from that in western countries in practical experience during the course of study.

For two years students go through the so-called «pre-clinical» training which includes such general subjects as physics, non-organic chemistry, analytical chemistry, physical and colloidal chemistry, organic chemistry and biological chemistry.

The students also take a course in general biology, human anatomy, histology, physiology, certain social science subjects, philosophy, Latin and one of the foreign languages (English, German or French). Clinical subjects are taught from the third to the fifth year inclusively. In this three-year period students must become proficient in a definite number of medical procedures, learn to diagnose using instruments, and carry out laboratory analyses. At the end of the third year all students undertake a six-week practical course. They perform the duties of the nurses. After their 4th year the students have another practical course lasting eight weeks, during which they act as doctors' assistants in rotation at the medical, surgical and obstetrical wards.

After the fifth year they take a six-week practical course in an outpatients' clinic.

During the sixth year of their studies the students go through the so-called subinternship when they gain extra experience in one of the three main clinical subjects—internal diseases, surgery, and obstetrics and gynaecology. Then after completing the course they get their work appointments. But before they proceed they spend a year (the 7th year of studies) as interns at a large hospital, specially suited for practical studies. Their salaries and their service record begin from the time of their appointment.
Post-Text Assignments

1. Read the text in paragraphs and answer the following questions:

1. What higher schools train doctors in the USSR? 2. How many medical institutes are there in the USSR? 3. Have all the Union Republics their own medical institutes? 4. Who has the right to enter a medical institute? 5. What examinations must one take to enter a medical institute? 6. Does the Soviet system of training doctors differ from that in capitalist countries? 7. How long does the so-called «pre-clinical» training last? 8. What subjects are taught during the first two years of study at the medical institute? 9. When do the salaries and service record begin?

II. Read and translate the text without using a dictionary:

MEDICAL EDUCATION IN THE USA

A little 50 years ago, a young man could become a doctor by serving an apprenticeship to a practising physician and taking a few courses in anatomy. To-day the future doctor must pass through eight to thirteen years of intensive and exhaustive study before starting to practise. First he must spend three to four years of pre-medical training at a university. There he learns the basic sciences. From those students who have made top grades in pre-medical studies are chosen candidates for medical school.

The medical curriculum is difficult. During the first two years of the four year medical school curriculum the students must master laboratory sciences; to learn the structure of the human body they study anatomy, both gross and microscopic. Thorough training is given in the subject of biological chemistry, which is the basis for clinical laboratory diagnosis and medical therapeutics. The functions of the body are learned from books and by laboratory experiments in classes of physiology. Because he is to deal intimately with people, the student must have a knowledge of psychology, the science of human behaviour. In his pathology classes he will learn about diseases and diseased tissues and in bacteriology classes the causes of infectious diseases will be made clear to him. Studying pharmacology he will learn about drugs. Usually all this study is done before he ever treats a patient. In his third and fourth years the student receives instruction and practical experience in the actual care of the patient. Basic studies in the senior courses include anaesthesiology, dermatology, endocrinology, forensic or legal medicine, internal medicine, neurology, obstetrics and gynaecology, radiology, surgery, psychiatry, ophthalmology, otolaryngology, preventive medicine, pediatrics and urology. During this time a student has the opportunity to spend considerable time in a hospital and acquaint himself with many more of the basic procedures and common disorders.

In the USA as well as in other capitalist countries higher education is very expensive and only those who have much money can enter higher schools and study at them.

III. Analyze the reading material closely and compare the Soviet system of training doctors with that in the USA.
IV. Write all medical terms out of the reading material and learn them.
V. Read and discuss:

NEGRO ENROLMENT IN MEDICAL SCHOOLS

For the past decade more and more attention has been directed to disadvantaged groups in the American population. Many educational institutions are showing an increasing awareness of the need to give special consideration to persons from impoverished backgrounds, especially the American Negroes. Because Negroes are underrepresented in the medical profession, educators in that field are also becoming interested in this problem. Even though more than 11% of the nation's population is Negro, less than 2% of American physicians are black. Or to put it another way, among white citizens, one American in 560 becomes a doctor, among the Negroes, it is one in 3,800. This means that only 2 per cent of medical students are Negroes.

SECTION II

PHYSIOLOGY

UNIT 1

2. When an Operation Is Necessary.

Word-Building Elements: Term-element «neu».

Pre-Text Assignments

1. Learn the following words and word combinations:

Mystery [ˈmɪstəri] таинство
Scientists penetrate into the mysteries of the brain.

Enigma [ˌɛnɪgme] загадка
The neurons are connected by links which are as yet an enigma.

Cerebral cortex кора головного мозга.
The energy block keeps the cerebral cortex alert.

Superfine [ˈsjuːpərˈfaɪn] сверхтонкий
Scientists graft superfine electrodes into the brain to study the signals from different neurons.

Hemisphere [ˈhæmsifə] полушарие головного мозга
The second block in charge of reception, processing and storage of information, is at the back of the cerebral hemispheres.

2. Read and translate the following terms. Memorize the meaning of the term-element «neu» - нерв:

neurodynamia, neuralgiform, neuramebimeter, neuroanatomy, neurobiology, neurocanal, neurocardiac, neurosurgery, neuration.

III. Analyze the following terms:

contraceptive, reliability, perceptible, neurectomy, neuraxon.
IV Match the following English word combinations with the Russian ones:

1. exceptional reliability  
   1. кора головного мозга
2. normal functioning  
   2. исключительная надежность
3. cerebral hemisphere  
   3. ощутимые последствия
4. perceptible consequences  
   4. нормальное функционирование
5. cerebral cortex  
   5. полуширние головного мозга

THE MYSTERIES OF THE BRAIN

A human brain has approximately 2,000 million cells — neurons, which comprise its fundamental core. These neurons are connected with one another by links which are as yet an enigma, but which provide for the exceptional reliability of the brain's functioning. When one or several neurons are damaged, others take over so that the brain as a whole goes on functioning normally.

The brain structure is extraordinarily complex — even a cursory description would run into volumes. Scientists have made hundreds of charts of the vision, motor centres, touch, hearing, speech... But there are still large areas whose functions are unknown, as damage there does not appear to have very perceptible consequences.

For a long time these areas were ignored. A century ago it all seemed reasonably simple. It was thought that every analyzer — motor, visual, auditory and so on, has its own control centre in the cerebral cortex, and a great deal of effort went into locating the different centres concerned with all complex forms of human psychic activity. Centres of writing, reading, counting and orientation in space appeared on brain charts.

Some fifteen years ago, when scientists succeeded in grafting superfine electrodes into the brain to study the signals from different neurons, it was found that every single neuron was highly specialized, and that like the dots on a television screen, they carry concrete information, they all work together to produce an image. Neuropsychology is a new science. It is the study of the mechanisms of the higher functions of the brain — thinking, memory, attention, speech, writing, etc.

Prof. A. Luriya, head of the Department of Neuropsychology at Moscow State University writes: «We study syndromes, not individual symptoms. Syndromes are the whole group of symptoms. We have succeeded in dividing behavioural acts into the simplest units and we know how any action is built up out of these little bricks».

Prof. Luriya and his co-workers divided the brain into three main functional units. The first unit is the energy block, the tonus complex. It keeps the cortex alert, and is situated in the central areas of the brain that were formed first.

The second unit in charge of reception, processing and storage of information, is at the back of the cerebral hemispheres. The frontal lobes are the third unit that is responsible for the programming and control of all the activities of the brain. Formerly it used to be thought that the large frontal lobes were unnecessary luxury that nature had allowed itself. Neuropsychological research has shown that these are vital areas
of the brain that integrate and combine the impulses transmitted by different analyzers, and help man programme his actions and carry them out.

Post-Text Assignments

I. Skim through the text and define its main idea, choose the key sentences.

II. Read the text closely and divide it into three logical parts. Entitle each of the parts using the key sentences.

III. Find in the text the English equivalents of the following word combinations and translate the sentences containing them:

исключительная надежность, нормальное функционирование мозга, структура мозга, ощутимые последствия, слуховые анализаторы, кора головного мозга, психическая активность, ориентация в пространстве, сверхтонкие электроды, хранение информации, полушарие головного мозга, программировать свои действия.

IV. Read the following extract and find corresponding item in the text:

Профессор Лурия и его сотрудники разделили мозг на три основные функциональные единицы. Первая — это энергетический блок, тонусный комплекс. Он поддерживает мозг в состоянии бодрствования и расположен в центральном отделе мозга, который возник первым. Вторая единица, отвечающая за восприятие, обработку и хранение информации, находится в заднем отделе полушарий. Лобные долки являются третьей единицей, которая отвечает за программирование и контроль всей деятельности мозга. Раньше считали, что большие лобные доли — ненужная роскошь, которую позволила себе природа. Нейропсихологические исследования показали, что эти важные участки мозга интегрируют и комбинируют импульсы, передаваемые различными анализаторами, и помогают человеку программировать и осуществлять свои действия.

V. Read and translate the following text without using a dictionary:

WHEN AN OPERATION IS NECESSARY

The brain is very well protected. It is cushioned in fluid like an embryo and the skull acts as a shock absorber. But a powerful blow may cause an inflammation, and a tumour may grow in the brain. The brain is compressed, causing headache which is impossible to bear. Such brain diseases as epilepsy, Parkinson's disease and others also occur. In all these cases an operation is the only remedy.

Surgical intervention is always a very great responsibility, but in brain surgery, the tiniest error will lead to a catastrophe. Injury caused by a scalpel to neighbouring tissues may be irreparable. The brain disintegrates faster than any other part of the body; tissues deprived of oxygen die within minutes. That is why the movements of a surgeon invading this delicate, highly-organized area must be quick and very precise, well nigh automatic. A neurosurgeon needs to have enormous stamina and be as fit as an athlete. His fingers need the skill and accuracy of a jeweller, for his work is just as delicate.
Many operations on the brain and the spinal cord are done under the microscope with a special set of miniature instruments. There are 43 kinds of instruments in the set.

Scientists are penetrating the mysteries of the brain more and more. Soviet scientists are using the latest developments in science and engineering in their attack on diseases of the brain.

VI. Discuss the text according to the plan:
1. The causes of brain disorders.
2. The radical methods of treating brain disorders.
3. Instruments employed in brain surgery.

UNIT 2

| Texts: 1. Physiology of the Skin. |
| Word-Building Elements: Term-element «patho»-. |
| Grammar: ing-forms. |

Pre-Text Assignments

I. Learn the following words and word combinations

Water depot ['depou] хранилище воды
The skin is one of the most important water depots of the organism.

Keratinization ['kærətɪmɪ'zɛɪʃn] ороговение
Keratinization of the epidermis is associated with complex transformations of albuminous ['ælˈbjuːmɪnəs] substances.

To resist [rɪ'zɪst] противостоять, препятствовать
The skin very well resists various mechanical influences.

Density [ˈdenstɪ] плотность
Density is the compactness of a substance.

Flexibility [ˈfleksəˈbɪlɪtɪ] гибкость
At that lecture the students learned about the density and flexibility of the stratum corneum.

Impermeable [ɪmˈpɜːrmiəbl] непроницаемый, непроходимый
A healthy skin is impermeable to most pathogenic microbes coming in contact with its surface.

Lubricant [ˈluːbrɪkənt] смазывающее вещество
The sebaceous glands secrete sebum which serves as an oily lubricant of the skin.

Volatile fluids [ˈvɔlətəl] летучие жидкости
Volatile fluids are absorbed more readily.

Inunction [ɪnˈʌŋkʃn] втирание
Absorption of solids is favoured by their vigorous inunction into the skin.

II. Form new words adding the term-element «patho»-. Remember the meaning of the term-element «patho»- болезнь, болезненное состояние:

anatomy, glycemia, metabolism, phoresis, psychology, biology.
III. Read and translate the following terms. Memorize the meaning of the term-element «kerato» - ороговение:

keratocele, keratocentesis, keratoconjunctivitis, keratodermatitis, keratodermia, keratogenous, keratoleukoma, keratohyalin.

IV. Match the following English word combinations with the Russian one:

1. metabolic process 1. подвергаться атрофическим изменениям
2. sebaceous gland 2. сальная железа
3. excretory function 3. защитные свойства
4. protective properties 4. потовая железа
5. sweat gland 5. обменный процесс
6. to undergo atrophic changes 6. выводная функция
7. pathogenic microbes 7. патогенные микробы

V. Put in the required words from those given in the right column:

1. The «specialized» receptors of the skin receive various stimuli from...
   1. eleidin
2. A healthy skin is ... to most pathogenic microbes.
   2. the skin
3. ... is a product of transformation of keratohyalin into a horny substance.
   3. impermeable
4. Sebum serves as an oily ... of the skin.
   4. the external environment
5. ... is connected with the central nervous system and through it with the other organs and systems.
   5. lubricant

VI. Find substitutes for the following word combinations:

1. substance which forms the base of horny tissue 1. density
2. the quality of being compact 2. panniculus
3. any agent producing reaction in an irritable tissue 3. keratin
4. pertaining to secretion 4. stimulus
5. a layer of tissue 5. secretory
6. a substance which does not alter its shape in response to any force 6. solid

VII. Translate the following sentences. Pay attention to the translation of the words with -ing forms:

1. Skin is one of the most important water depots of the organism capable of retaining water and large amount of mineral salts. 2. As a natural covering of the body the skin protects the organism from various unfavourable external influences. 3. As a poor heat conductor the skin protects the human organism from overheating and cooling. 4. The atrophic changes in the derma result in a thinning of the skin and loss of its normal elasticity. 5. The acid reaction of the sebum hinders the development most of the pathogenic microorganisms occurring on the surface of the skin.
PHYSIOLOGY OF THE SKIN

The skin is intimately connected with the central nervous system and through it with the other organs and systems.

The skin plays an important part in the metabolic processes which are regulated by the central nervous system. It also plays a significant part in water and mineral metabolism. It is one of the most important water depots of the organism capable of retaining water and large amounts of mineral salts.

The skin participates in the processes of protein, fat and carbohydrate metabolism. Keratinization of the epidermis is associated with complex transformations of albuminous substances and formation of keratohyalin, then eleidin and lastly, keratin. The skin is one of the principal fat depots of the organism. The skin also participates in the metabolism of vitamins A, C and D, and the vitamin B complex (B₁, B₂ and PP).

The skin is a sense organ. The numerous complex nervous receptors in the skin, connected through nerve fibres with the central nervous system, serve the skin to exercise its function of a sense organ. The specialized receptors of the skin receive various stimuli from the external environment and transmit the stimulation to the central nervous system.

Protective Properties of the Skin. As a natural covering of the body the skin protects the organism from various unfavourable external influences — physical, chemical and infectious. The physical influences on the skin are mechanical, thermal (heat and cold), electrical and actinic (the sun, ultraviolet lamps, roentgen rays). The skin very well resists various mechanical influences — friction, shock, pressure, stretching. The skin owes its strength to its structure — the density and flexibility of the stratum corneum, the resilient, elastic network of connective tissue fibres of the derma and panniculus adiposus, and the shock-absorbing properties of the loose and resilient fatty lining of the panniculus adiposus. As a poor heat conductor the skin protects the human organism from overheating and cooling in cases of variations in the external temperature and thereby helps to maintain a constant body temperature.

Intact skin protects the organism from penetration of various infectious agents. A healthy skin is impermeable to most pathogenic microbes coming in contact with its surface. The immune properties of the skin also prevent pathogenic microbes from penetrating into the skin and developing therein. The main substance of the derma possesses antimicrobial action. Other protective substances of the type of antibodies have also been discovered in the skin.

Secretory Function of the Skin. The secretory function of the skin is performed by the sweat and sebaceous glands. The sweat glands are a constituent part of man’s excretory system. Sweat is a fluid with a low specific gravity (about 1004) and a composition somewhat similar to that of urine. It is 98 per cent water and 2 per cent solid residue. In addition to water the organism excretes through the sweat glands salts (sodium chloride), and protein metabolites (urea, uric acid, ammonia, etc.) Moreover, the secretion of sweat is associated with processes of heat regulation. Close to 500—600 ml of sweat is excreted in 24 hours. In
cases of hard physical work, high external temperature and fever the amount of excreted sweat may sharply increase (2—4 litres and even more).

The sebaceous glands secrete sebum which serves as an oily lubricant of the skin. About 20 g of sebum is secreted in 24 hours. The fatty lubrication softens the skin, imparts elasticity to the stratum corneum and facilitates the function of contacting surfaces of the skin.

The acid reaction of the sebum hinders the development most of the pathogenic microorganisms occurring on the surface of the skin. Sebaceous glands also participate in the excretory functions of the organism. Certain metabolites are eliminated in the sebum.

Absorptive Ability of the Skin. Healthy, undamaged skin is scarcely able to absorb water, other liquids and solids. Volatile fluids — chloroform, ether, etc.— are absorbed more readily. Solids can be absorbed if they are dissolved in volatile fluids. Absorption of solids is favoured by their vigorous inunction into the skin. The permeability of the normal skin to oxygen, carbon dioxide and water vapours enables the skin to participate in the respiratory function of the organism which consists in absorption of oxygen and elimination of carbon dioxide and water vapours. Thus the skin supplements, as it were, the basic respiratory function performed by the lungs.

Age and Sex Characteristics of the Skin. The structure and function of the skin have certain characteristics associated with age and sex.

The skin of children, especially of infants, contains much more water than that of adults. It is also thinner, more delicate, more vulnerable and more readily macerated than the skin of adults.

In old age the skin undergoes atrophic changes and the secretion of the sebaceous glands diminishes, which is conductive to dryness of the skin.

The atrophic changes in the derma result in a thinning of the skin and loss of its normal elasticity.

In most cases women's skin is thinner and more delicate. Women usually have less hair on the skin of their extremities and trunk than do men. In women the subcutaneous adipose layer is usually more developed, especially on the hips, buttocks and abdomen, than it is in men.

Post-Text Assignments

I. skim through the text and find sentences expressing the central idea of the text.
II. Read the item «Protective Properties of the Skin» and speak about those properties.
III. Read the item «Secretory Function of the Skin» and answer the questions:

IV. Read the item «Absorptive Ability of the Skin», pick out the words characterizing this ability and describe it.

V. Read the last paragraph and speak about the atrophic changes in derma.

VI. Write a short summary of the text.

VII. Read and translate the following text:

ANATOMY OF THE SKIN

The skin is a natural covering and inseparable part of the human body. By separating the organism from the external environment it performs the important function of protecting the organism from unfavourable influences of the environment. It also participates in a number of very important processes, namely, thermoregulation, metabolism and excretion of waste products.

Structure of the Skin. The anatomical structure of the skin fits it for the performance of these important functions.

The skin is composed of three layers: 1) epidermis or external layer, 2) true skin or derma, and 3) subcutaneous adipose layer or panniculus adiposus.

The epidermis consists of epithelial cells which possess great ability to multiply and replace the destroyed cells of this layer. Owing to this ability any wounds suffered by the skin, as a result of injury or skin disease, heal quickly and without leaving a trace.

Microscopic examination of the epidermis shows that it is composed of five layers: 1) stratum germinativum or basale, 2) prickle-cell layer, 3) stratum granulosum, 4) stratum lucidum, and 5) stratum corneum.

The stratum germinativum or basale adheres to the true skin or derma. It consists of one layer of cylindrical cells with large and easily stained nuclei. The cells of the stratum germinativum do not adhere each other, but are divided by narrow fissures. These fissures called intercellular canaliculi extend into similar canaliculi of the overlying prickle-cell layer of the epidermis. Lymph from the lymphatic fissures of the derma penetrates into the canaliculi of the epidermis and circulates through them. The cells of the stratum basale are interconnected by protoplasmic bridges. The epidermis has no blood vessels, and the lymph entering the intercellular canaliculi brings nutrient substances into the epidermis and removes the metabolites.

The protoplasm of the cells of the stratum germinativum has grains of melanin (pigment) which are coloured from light brown to dark brown.

The cells of the epidermis multiply in the stratum germinativum. The young cells formed as the result of division replace the older cells and crowd them into the prickle-cell layer. No multiplication of cells is normally observed in the prickle-cell and other overlying layers of the epidermis.

The prickle-cell layer is made up of an average of 4—6 rows of cells. The interpapillary prominences of the epidermis have more rows of cells. The prickle-cells are large, polyhedral and have large, light nuclei. These cells also have numerous intercellular protoplasmic bridges and are separated from each other by intercellular canaliculi.
The stratum granulosum is composed of 1—3 rows of elongated cells arranged parallel to the surface of the skin. These cells have pale nuclei.

The three lower layers of the epidermis—stratum germinativum, prickle-cell layer and stratum granulosum—are often designated together as the malpighian layer.

Over the stratum granulosum is the stratum lucidum. Under the microscope this layer appears as a shiny thin band; it is composed of 1—2 rows of flat, shiny cells without nuclei. The protoplasm of these cells contains eleidin (an albuminoid substance). Eleidin is a product of further transformation of keratohyalin into a horny substance.

The stratum corneum is the outermost layer of the epidermis. It is formed of several intimately united rows of flat, thin, horny plates overlying each other. The horny plates are composed of completely keratinized cells of the epidermis without nuclei. Their protoplasm has completely changed to keratin, the end product of the process of keratinization.

**True Skin or Derma.** The second layer of the skin—the true skin or derma—is located under the epidermis. The derma abounds in connective tissue fibres which form interweaving bundles. The connective tissue of the derma contains but few cells. The derma is composed of two layers: papillary and reticular. The papillary layer is next under the epidermis. The bundles of connective tissue fibres in the papillary layer are quite delicate and interweave in various directions. Many bundles run perpendicularly to the surface of the skin and project into the papillae.

The reticular layer consists of thicker bundles of fibres which are formed by interweaving from a dense network of connective tissue fibres. A large part of these bundles is arranged parallel to the surface of the skin. The thickness of the derma ranges in different parts of the skin from 0.5 to 4 mm. The derma has no clearly defined junction with the underlying panniculus adiposus (subcutaneous adipose layer).

The panniculus adiposus also consists of interweaving loose bundles of connective tissue fibres which form a large-mesh network. The meshes of this network contain fat lobules-accumulations of fat cells.

The panniculus adiposus is thicker on the abdomen, hips and buttocks. It is attached to the underlying fascia by connective tissue bundles.

**Blood and Lymph Vessels of the Skin.** The skin has a well-developed system of blood and lymph vessels. The blood vessels of the skin may hold up to one-fifth of the total mass of blood of the human organism. In the processes of blood circulation the skin performs the function of an important blood depot.

The arterial trunks enter the panniculus adiposus from deeper tissues. Here they give off branches which supply the panniculus adiposus and at the junction with the derma form an arterial plexus known as the deep cutaneous vascular network. Another arterial plexus—the superficial cutaneous vascular network—is formed at the boundary between the reticular and papillary layers.

The lymphatic system of the skin begins with the intercellular spaces of the epidermis and the numerous lymph spaces of the derma. The lymph
vessels run alongside the blood vessels and form a superficial and deep vascular network.

VIII. Pick out the words pertaining to the structure of the skin.
IX. Pick out the words of Latin origin and translate them in a written form.
X. Write shortly about the structure of the skin.

UNIT 3

2. The Cardio-vascular System.
Word-Building Elements: Term-elements: «micro»-, «macro»-, «cyte».

Pre-Text Assignments

1. Learn the following words and word combinations:

   Nourishment [ˈnɔːrɪʃmənt] питание
   The blood supplies all the tissues and organs of the body with oxygen and nourishment.

   Disintegration [dɪsˌɪntəˈɡreɪʃən] распад
   The blood platelets, upon disintegration, set free a factor that is essential for the clotting of blood.

   Coagulation [kəˈæɡjʊˈleɪʃn] свертывание крови
   The normal coagulation time is from three to five minutes.

   To suspend [səsˈpend] взвешивать
   Plasma is the fluid portion of the blood in which the cells are suspended.

   Amber-coloured fluid [ˈæmbrəˈkʌləd] желтая жидкость.
   Serum is the amber-coloured fluid that remains after coagulation of the blood and the removal of the cellular elements and fibrinogen.

   To dispense готовить и отпускать лекарства.
   Normal human plasma may be dispensed as liquid, frozen, or dried plasma.

   Albumin [ˈælbəmɪn] белок, беликовое вещество.
   A serum albumin is prepared from normal blood with serum globulin reduced to a minimum and most of the salt removed.

II. Read and translate the following terms. Pay attention to the meaning of the term-element «cyte» клетка:

   erythrocyte [ˈɛrɪθroʊsɪt] erythrocyte, leukocyte [ˌljuːkəʊsɪt], thrombocyte [ˈθɜːmbəʊsɪt], macrocyte [ˈmækroʊsɪt], microcyte [ˈmɪkroʊsɪt].

III. Read and translate the following terms. Memorize the meanings of the term-elements «micro»- маленький and «macro»- большой:

   microbiology, microcopy, microcephaly, microelement, macroglosia, macromelia, macropsia, macrocyte, microcyte, macroscopic, microorganism, microwave.

IV. Match the following English word combinations with the Russian ones:

1. red blood cells 1. свертывание крови
2. to combat infection 2. поддерживать нужное количество крови
3. to destroy bacteria 3. красные кровяные тельца
4. the clotting of blood 4. бороться с инфекцией
5. to maintain an adequate blood volume 5. уничтожать бактерии

V. Find substitutes for the following word combinations:
1. the fluid remaining after removal of the cellular elements from the blood by centrifugation
2. a red blood corpuscle
3. deficient quantity or quality of the blood
4. a soluble protein in the blood plasma
5. escape the blood from the blood vessels
6. deficiency of protein in the blood
7. within the vein
8. any disease of the kidney

1. nephrosis
2. fibrinogen
3. hemorrhage
4. hypoproteineemia
5. anemia
6. erythrocyte
7. plasma
8. intravenously

VI. Read and translate the following sentences. Pay attention to the attributes. Define the parts of speech they are expressed by:

1. The cellular fraction consists of red blood cells, white blood cells and blood platelets. 2. The normal coagulation time is from three to five minutes. 3. Plasma is the fluid portion of the blood. 4. Soviet public health bodies take great care of providing healthful working and living conditions. 5. People living or working in close ill-ventilated rooms are generally not healthy and more often suffer from various diseases.

**THE BLOOD**

Blood Structure. The blood supplies all the tissues and organs of the body with oxygen and nourishment. It also removes from the tissues the products of metabolism which are not needed and carries them to the lungs, kidneys, liver, intestines, and other parts of the body where they are excreted.

Whole blood consists of a cellular fraction and a cell-free fluid portion, which is the plasma. The cellular fraction consists of red blood cells (erythrocytes), white blood cells (leucocytes), and blood platelets (thrombocytes).

The chief constituent of the red blood cells is hemoglobin, an iron and protein compound that carries oxygen from the lungs to all the tissues and organs of the body. There are normally 4,500,000 to 5,000,000 red blood cells per milliliter and about 15 Gm of hemoglobin per 100 ml of blood. A deficiency in the number of red blood cells or a reduction in the amount of hemoglobin is known as anemia. In certain anemias the red blood cells may be larger than normal (macrocytes) or smaller than normal (micromytes).

The white blood cells are less numerous than red blood cells. There are normally from 5,000 to 10,000 in each milliliter of blood.

A majority of these cells are concerned with combatting infection in the body. They destroy bacteria in the blood and tissues and also help neutralize poisons formed by bacteria by producing antibodies.
The blood platelets, upon disintegration, set free a factor that is essential for the clotting of blood. There are a number of other substances present in the blood which are activated and cause the blood clot shortly after its release from the blood vessels. The normal coagulation time is from three to five minutes.

Plasma is the fluid portion of the blood in which the cells are suspended. Serum is the amber-coloured fluid that remains after coagulation of the blood and the removal of the cellular elements and fibrinogen. Both plasma and serum contain proteins, fat, and inorganic and organic chemical substances, including immune bodies.

Transfusion with whole blood or fractions of whole blood, such as red blood cells suspended in isotonic salt solution, plasma, or serum, increase the cellular constituents or increase the volume of blood. They are indicated in the treatment of shock, acute or chronic hemorrhage, blood dyscrasias (abnormalities), acute and chronic infections, and various other diseases.

**Blood Derivatives.** Preserved whole blood and blood fractions are available for transfusions. Blood serum and plasma may be preserved as a lyophilized, sterile dry powder.

**Normal Human Plasma.** This is a cell-free plasma in dry form, which is restored to volume by the addition of sterile, pyrogenfree 0.1 per cent citric acid solution. It is used in the treatment of shock, with or without hemorrhage; extensive burns with loss of plasma; and hypoproteinemia. The usual intravenous dose is 500 ml. It may be dispensed as liquid, frozen, or dried plasma.

**Normal Human Serum Albumin.** This is a serum albumin prepared from normal blood with serum globulin reduced to a minimum and most of the salt removed. The usual intravenous dose is equivalent to 25 to 50 Gm of albumin. It is injected intravenously for the treatment of shock, nephrosis, cirrhosis of liver, and hypoproteinemia.

**Plasma Expanders or Substitutes.** Plasma expanders or substitutes are compounds of high molecular weight which exert sufficient osmotic pressure when they are present in blood to retain fluid in the circulation and thus maintain an adequate blood volume. The plasma expanders most often used are dextran and gelatin solutions.

---

### Post-Text Assignments

I. Read the text. Define the main idea of the text.

II. Read the item «Blood Structure» and answer the questions.


III. Pick out 7 sentences characterizing the structure of the blood. Translate them in a written form.
IV. Choose all the adjectives pertaining to the blood. Translate and learn them.

V. Speak about blood derivatives.

VI. Read the last paragraph and speak shortly about plasma expanders or substitutes.

VII. Write a summary of the text.

VIII. Read and translate the following text:

THE CARDIO-VASCULAR SYSTEM

The cardio-vascular system consists of the heart, the arteries, the arterioles, the capillaries, the venules and the veins. The heart acts merely as a pump to circulate adequate blood through the tissues of the body.

Blood is considered as one of the connective tissues. It consists of cells suspended in a fluid matrix called plasma. Its chief function is to supply oxygen and nutrients to the tissues for metabolism and to remove the products of that metabolism for excretion in the lungs and kidneys. It also acts as a heat exchange medium for heat distribution and thereby maintains a stable temperature within the body under varying external conditions.

The various tissue circulations are arranged in parallel coupled circuits with certain morphologic and functional differentiation. These parallel-coupled circuits include the cerebral, coronary, renal, muscle, skin, bone, and splanchnic circulation; the most important components of the splanchnic circulation are the liver, the gastro-intestinal tract, the spleen, and the pancreas. This parallel circuit arrangement provides a means whereby blood flow to a tissue can vary independently of changes in blood pressure.

A working organ needs more nourishment and therefore a larger blood supply as compared to the resting organ. To cope with this situation the blood is shunted from the resting organs to the working ones. This is possible because the blood vessels are capable of selective constriction or dilatation.

In addition to such shifts of blood from inactive to active organs, the body has (comparable to the cardiac reserve) a reserve blood volume. In the resting state of the body all the blood is not in active circulation. Some of it is withdrawn and temporarily stored until there is a demand for it. The large veins of the abdomen and thorax and pulmonary veins may serve as reservoirs.

The flow of blood through the body is thus varied in the several parallel circuits according to the specific biochemical needs of the particular organs. The heart and the blood vessels have been therefore provided with extensive control systems which serve to regulate tissue perfusion. Certain controls are intrinsic in the tissues of the heart and blood vessels, while additional control is provided by mechanisms that are extrinsic to the cardio-vascular system.

IX. Divide the text into sense-groups, entitle them.

X. Write a summary of the text.
UNIT 4

2. Patient History.

Word-Building Elements; Term-element «gastro».
Grammar: Modal Verbs.

Pre-Text Assignments

I. Learn the following words:

To convert [kənˈvɔːt] превращать
One of the functions of the gastro-intestinal tract is to convert complex foods into simpler substances.

Enzyme [ˈenzəim] фермент
Chemical processes involving enzymes are required for normal digestion.

Gastritis [gæsˈtrætɪs] воспаление желудка, гастрит
At times the presence of too much acid in the stomach may cause gastritis.

Flatulence [ˈflætʃjuːləns] скопление газов в желудке
A deficiency of acid may cause flatulence.

Constipation [ˈkɒnstrəpeɪʃn] запор
When the normal activity is retarded, constipation results.

Lumen [ˈluːmɛn] просвет протока (трубчатого органа, артерии)
Hydrochloric acid is produced by certain cells in the wall of the stomach and accumulates in the lumen of this organ for digestive purposes.

II. Read and translate the following terms. Memorize the meaning of the term-element «gastro» - желудок:

gastroenterologist, gastroenterology, gastrology, gastrotherapy, gastrotomy, gastro-intestinal, gastromalacia, gastronephritis, gastropancreatitis, gastropathy.

III. Analyze the structure of the following terms:

heartburn, constipation, hydrotherapy, digestion, replacement, hydrocholoric, antiarrheics, anticeptics, gastro-intestinal.

IV. Match the following English word combinations with the Russian ones:

1. gastro-intestinal tract 1. поглощаться кровью
2. to be absorbed by blood 2. использоваться для питания
3. to be used for nourishment 3. желудочно-кишечный тракт
4. peristaltic activity 4. стимулировать ток желчи
5. to stimulate the flow of bile 5. перистальтическое движение биля
6. peptic digestion 6. переваривание пепсином

V. Find substitutes for the following word combinations:

1. pertaining to pepsin or to digestion 1. digestion
2. excessive formation of gases in stomach or intestine 2. deficiency
3. failure of digestive function 3. peptio
4. a lack or shortage
5. the conversion of food into material assimilable by the body

VI. Analyze the meanings of Modal Verbs. Define their tense-forms and functions in the following sentences:

1. Drugs may increase or decrease the motor activity of the intestines. 2. The doctor must come in time. 3. After the traumatological department the students went to the other department where they could see the patients who had undergone abdominal operations. 4. We could see that the patient’s post-operative condition was good. 5. You must consult your own doctor. 6. It may be supposed that your attacks of bronchial asthma are caused by polyps in your nose. 7. You must be in the open air as much as possible.

GASTRO-INTESTINAL TRACT AND ITS DISORDERS

The Functions of the Gastro-intestinal Tract. The functions of the gastro-intestinal tract are: 1) to convert complex foods in the diet into simpler substances that may be absorbed by the blood and used for nourishment by the body; 2) to propel the products of digestion to their point of absorption into blood stream; and 3) to excrete waste materials. Chemical processes involving enzymes as well as digestive fluids of the proper pH for optimal enzyme activity are required for normal digestion. At times the presence of too much acid in the stomach may cause or contribute to gastritis or peptic ulcer. At other times a deficiency of acid may cause indigestion, flatulence, or colic. The rate of movement of the intestinal contents through the tract is influenced by many factors - character of the food eaten, variations in muscle tone, peristaltic activity, consistency of the fecal mass, emotional status, etc. When the normal rate of activity is retarded, constipation results; when the rate of expulsion of the contents is excessive, diarrhea occurs.

Drugs of many kinds are available in the gastro-intestinal tract. They may be administered 1) to neutralize excessive acid in the stomach (antacid); 2) as replacement therapy when there is a deficiency of acid or enzymes (pepsin); 3) to stimulate the flow of bile; 4) to relieve flatulence and colic (carminatives); 5) to produce vomiting in acute poisoning (emetics); 6) to absorb poisons or toxins; and 7) as diagnostic acids in detecting abnormal or diseased conditions.

In addition, drugs may increase or decrease the motor activity of the intestines. Cathartics (laxatives and purgatives) increase peristalsis in a number of ways and produce evacuation of the bowels. Antidiarrheics decrease excessive bowel movement, and intestinal anticeptics are used to check the growth of bacteria.

Gastric or Peptic Digestion. Hydrochloric acid (HCl) is produced by certain cells in the wall of the stomach and accumulates in the lumen of this organ for digestive purposes. Another substance, the enzyme pepsin, is manufactured by still other gastric cells. These two secretions constitute an excellent digestive mixture for the breakdown of protein.
foodstuffs. Ordinarily this is the normal situation in the stomach and is called «peptic digestion». The acid becomes so strong during the gastric phase of digestion that it could erode, by its dissolving action, an area of the skin upon prolonged contact. The stomach, however, under normal conditions is peculiarly immune to the powerful erosive or digestant action of its own juice. The first few inches of the duodenum are also bathed with the highly acidic stomach contents as they pass through the pyloric canal, which acts as a valve between these two parts of the tract. The membrane of the upper duodenum is likewise resistant to the erosive action of gastric juice.

**Peptic Ulcer.** Under certain conditions, a small area of the thin surface membrane of the stomach or duodenum may break down. The underlying connective tissue in the wall of the viscus (organ) is not nearly so resistant to the acid as the lining membrane. The gastric juice may eat away at the tissue and cause an open ulcer. This is termed a «peptic ulcer» because it is produced by «peptic digestion».

It now becomes highly desirable and often necessary to abolish the hydrochloric acid over a period of weeks in order to allow the ulcer to heal. The re-establishment of the completely intact lining membrane, with its natural immunity to strong acid, is the goal in therapy. In addition to temporary reduction or abolition of the acid, other agents and measures are usually employed. An antispasmodic is routine with most physicians. A general sedative, such as phenobarbital, a diet varying from milk and cream in the acute phase to merely selected bland items later, and possible changes in employment factors constitute other phases of the treatment regimen.

**Hyperacidity.** This clinical term describes excessive production of hydrochloric acid. It is probably more aptly applied to the reaction of some individuals' stomachs or esophagi than to a stronger-than-normal concentration of acid. The burning sensation, erroneously named «heartburn», may arise in an irritated stomach wall (gastritis) or in the esophagus upon reflex of acid upward in this tube. The lining of the latter, unlike that of the stomach, does not have a natural immunity to acid and therefore is chemically irritated by the hydrochloric acid.

**Post-Text Assignments**

I. Skim through the text and find the sentences expressing the main idea of the text.

II. Read and translate the first paragraph of the text. Find the words pertaining to the functions of the gastro-intestinal tract. Speak about those functions.

III. Read the second paragraph of the text and pick out the names of the drugs used in the treatment of the diseases of the gastro-intestinal tract.

IV. Skim through the item «Gastric or Peptic Digestion». Speak about peptic digestion.

V. Read the item «Peptic Ulcer» and write out the sentences containing modal verbs. Translate them.

VI. Skim through the text once again and speak on the following items:

1. The functions of the gastro-intestinal tract.
2. Gastro-intestinal disorders.
3. The treatment of gastro-intestinal disorders.
VII. Read and translate:

PATIENT HISTORY

The patient, a 77 year-old male, had been well until one week prior to admission, at which time he experienced sudden onset of severe abdominal pain. The pain was periumbilical, steady and nonradiating in nature. He was admitted to another hospital where physical examination revealed mild diffuse abdominal tenderness, most pronounced in the right upper quadrant. Several hours after admission, he began to vomit coffee groundlike material. He was treated with nasogastric suction and intravenous replacement therapy for six days. Ampicillin was given parenterally for four days. An intravenous cholangiogram and upper gastro-intestinal contrast studies were normal. The patient had three soft bowel movements daily. Laboratory values at admission were reported as amylase 275, normal zero to 200; bilirubin direct total 0.4/1.4; lactico dehydrogenase 184; normal serum glutamic-oxalacetic transaminase, and alkaline phosphatase. The patient continued to complain of diffuse abdominal pains and nausea. On several occasions, the patient was noted to have atrial fibrillation which led to digitalization. Nine days after his admission, abdominal pain and nausea persisted. He was transferred to the Massachusetts General Hospital.

VIII. Answer the following questions:

1. What were the patient's troubles? 2. What was the patient treated with? 3. Can you suppose the disease the patient was ill with?

UNIT 5

| Texts: | 1. The Kidneys. |
|        | 2. Case Report. |
|        | 3. Post-Transplantation Pancreatitis. |

Word-Building Elements: Prefixes intra-, extra-.

Pre-Text Assignments

1. Learn the following words and word combinations:

**Excreting** [eksˈkreːtɪŋ] выделение
The kidneys have the task of forming the urine as a means of excreting the excess of the substances which are absorbed from food.

**Homeostasis** [,həʊmiˈɒstəsɪs] равновесие содержания жидкости
Water and salt balance and certain other features of homeostasis are maintained in a human body.

**Interstitial fluid** [,ɪntəˈstɪʃəl] промежуточная жидкость
Water is distributed in the body in three main compartments: the blood plasma, the interstitial fluid and intracellular fluid.

**Renal diseases** ['rɛnəl] почечные заболевания
In cardio-vascular and renal diseases water and salts are retained in the body.

**Edema** ['ɛdəmə] отек
Excess fluid which is accumulated in the tissues may cause edema.
Perspiration [pəsˈpɛrən] потение
The perspiration is one of the chief additional avenues of excretion of water.

Glomerular filtration [ɡləˈmerulə ˈfɪlˈtreɪn] выделение в почечном клубочке
The glomerular filtration rate is about 100 ml. per minute.

Tubular reabsorption [ˈtjuːbəˈrɛʃən] обратное всасывание в почечных каналах.
By decreasing tubular reabsorption more urine is excreted.

II. Form new words adding the prefixes intra-, extra-. Remember the meanings of the prefixes intra- в, в середине and extra- за пределами чего-либо:
   a) abdominal, arterial, capsular, cellular, cutaneous, dermal, duodenal;
   b) cellular, muscular, ocular, peritoneal, pleural.

III. Analyze the structure of the following words:
extracellular, reactivation, reabsorbtion, cardio-vascular, excretion, admission, pathological, intracellular, interstitial, electrolyte, inorganic.

IV. Match the following English word combinations with the Russian ones:
1. renal diseases 1. промежуточная жидкость
   2. extracellular fluid 2. выделение неорганических солей
   3. excretion of inorganic salts 3. поддерживать баланс воды
   4. interstitial fluid 4. почечные заболевания
   5. to maintain water balance 5. чрезмерное выделение пота
   6. excessive sweating 6. внеклеточная жидкость

V. Find substitutes for the following word combinations:
1. having equal osmotic pressures 1. osmotic
   2. pertaining to osmosis 2. homeostasis
   3. the removal of water from a substance 3. isotonic
   4. a state of balance between opposing forces or influences 4. dehydration
   5. pertaining to a glomerus 5. equilibrium
   6. a tendency to uniformity 6. glomerular

THE KIDNEYS

The Functions of the Kidneys. The kidneys have the general and important function of maintaining a normal environment for the cells of the body as regards the water and dissolved substances that surround them. The substances absorbed from food, including water and many salts, and the many biochemical processes taking place in the body, present the kidneys with the task of forming the urine as a means of excreting the excess of such substances and, by far, most of the waste products of metabolism. By so doing, water and salt balance and certain other features of homeostasis are maintained.
Water, which constitutes more than two thirds of the body weight, is distributed in the body in three main compartments: the blood plasma, the interstitial fluid (fluid between the cells), and the intracellular fluid (fluid within the cells), which is the largest compartment. The intracellular fluid (blood plasma, interstitial fluid) contains isotonic sodium chloride solution. The ingestion of 9 g of table salt will hold 1 liter of fluid in the tissues. This proportion constitutes a solution of 0.9 per cent sodium chloride, which is practically isotonic.

The osmotic pressure of the electrolytes and the selective permeability of the cell membrane play an important role in maintaining water balance. The plasma proteins are essential in maintaining the blood volume and thus are important in controlling the water content of the tissues. Owing to their large size, these proteins cannot diffuse through the capillaries; thus by osmotic pressure they hold water in the blood.

During health the water content is very constant, whereas in certain pathological conditions there is a shifting of water balance. In cardio-vascular and renal diseases, water and salts are retained in the body and excess fluid accumulates in the tissues, causing edema. In ADDISON's disease (of the adrenal cortex), the ability of the kidneys to retain sodium chloride is impaired: therefore this salt is excreted in the urine with large quantities of water, and dehydration results. Other conditions, such as vomiting, diarrhea, hemorrhage, and excessive sweating produce generalized dehydration.

Dissolved Constituents of the Extracellular Fluid and the Blood Plasma.

The extracellular water is in constant circulation in health, and certain dissolved substances are transported rather freely to and from the cells of the various organs and tissues. Among the more prevalent substances which pass across the capillary walls from the blood to the extracellular fluid compartment, or in the reverse direction, are oxygen; foods such as glucose, amino acids, and fatty acids, waste products, such as carbon dioxide, urea, and the water from metabolism of foods; and various salts. The latter include sodium chloride and sodium bicarbonate predominantly, and small amounts of potassium, calcium, and magnesium salts. Some of the salts are phosphates, chlorides, sulfates, and salts of organic acid, such as fatty acids.

Our diet contains salts of organic and inorganic acids and bases. These and the products of the metabolic activities of cells become ionized in the body fluids. Some of these ions are normal constituents of the body fluids and cells. The usual concentration of each ion is fairly constant, but it varies among the individual ions. When the plasma flowing to the kidneys contains ion concentrations in excess of those normally required, the excess is excreted in the urine. In this manner the kidneys assist in regulating the acid base balance of the blood within the required narrow limits. The buffer systems in the blood, lymph, tissue fluids, and cells also aid in maintaining a physiological pH range of the blood between 7.3 and 7.5.

The functions of the kidneys include: 1) the excretion of water and the end products of metabolism such as urea, uric acid, organic salts, and
foreign substances; 2) the excretion of inorganic salts not needed by the body and tissues; and 3) the maintenance of the osmotic pressure of the blood and tissues; 4) the maintenance of the acid-base equilibrium of blood. Adults usually consume from 5 to 15 g of sodium chloride, smaller quantities of other salts, and 2 to 4 liters of water daily. More than half this water is excreted by the kidneys, more in cool weather than warm. The perspiration and feces, especially in diarrhea, are the chief additional avenues of excretion of water. The above intake of salt is approximately 20 times the daily requirement, our dietary habits thus overshadowing our needs.

The formation of urine from the blood consists of glomerular filtration and tubular reabsorption. As the glomerular filtrate passes through the tubules, substances essential to the blood and tissues — water, glucose, salts, amino acids, and sodium bicarbonate — are reabsorbed. These compounds are called threshold substances. They must reach a certain concentration in the blood before they are excreted in the final urine flow. Other substances in the glomerular filtrate, such as potassium and urea, are not readily reabsorbed by the tubules and are called low-threshold or nontreshold substances. Because they are necessarily secreted in the urine with water, they may be used as diuretics.

The glomerular filtration rate is about 100 ml. per minute. About 99 ml. of the fluid is returned to the blood, and 1 ml. is secreted in the urine. That which is not reabsorbed by the tubules is excreted as urine, therefore, by decreasing tubular reabsorption, more urine is excreted. Most of the diuretics (agents which increase the flow of urine) act by interfering with tubular reabsorption of sodium and chloride, and thus of water.

There are a number of other factors that affect the secretion of urine, such as the blood pressure, the amount of blood circulating through the kidneys, and the activity of the kidneys. Drugs that increase the blood pressure and improve the circulation as well as drugs that increase the activity of all cells aid in producing urine formation when these factors are depressed.

Post-Text Assignments

I. Skim through the text and find the sentences expressing the main idea of the text

II. Pick out the sentences describing the functions of the kidneys. Translate the sentences.

III. Define the main idea of the item «The Functions of the Kidneys» and answer the questions:

1. What is the most important function of the kidneys? 2. How are the waste products of metabolism excreted from the body? 3. Where are the substances absorbed from? 4. Where is water distributed in a human body? 5. What do we call the interstitial fluid? 6. What does the intracellular fluid contain? 7. When do we observe the shifting of water balance? 8. When are salts and water retained in the body?
IV. Read the item «Dissolved Constituents of the Extracellular Fluid and the Blood Plasma». Speak shortly according to the following plan:

1. Products of the metabolic activities of the cells.
2. The functions of kidneys.
3. The formation of urine from the blood.

V. Write a summary of the text.

VI. Read and translate the following text:

/   CASE REPORT   /

The son of a family without a previous history of renal diseases was admitted to hospital at 3 months of age with periorbital and peripheral edema. Facial edema during the neonatal period was noted only in retrospect. The serum-creatinine was 0.3 mg and a serum-albumin was 0.9 g per 100 ml. Urinary protein excretion was 2.7 g per 24 hours. Serum-hemolytic complement was 40 units (normal 49 ± 8) and the Venereal Disease Research Laboratories was negative.

He was treated with prednisone (2 mg per kg per day for 20 days) and corticotrophin (25 mg per day for 7 days) without a reduction in proteinuria. He was admitted to hospital when he was 23 months old because of increased edema and pleural effusion. The edema cleared with diuretic therapy and he was given cyclophosphamide (25 mg per day and prednisone 30 mg on alternate days) for one year without apparent benefit.

When he was 34 month old, urinary protein excretion was 5.3 g per 24 hours. At 4 years of age he was in severe renal failure with a blood-urea-nitrogen of 130 mg per 100 ml and serum-creatinine of 11.0 mg per 100 ml. The serum-albumin was 24 g per 1000 ml. His weight was 16 kg and his height was 38 in. He was treated with hemodialysis and then received a renal transplant from his maternal grandmother, there was a prompt return of renal function without significant proteinuria during the first 2 weeks after transplantation. Two weeks after transplantation a fever (102—103°) and interstitial pneumonitis developed, and he demonstrated signs of homograft rejection. Renal function did not return after standard therapy for acute homograft rejection reaction and the graft was removed 6 weeks after transplantation. Two weeks later he received a renal homograft from a cadaver donor. After a period of acute tubular necrosis, requiring temporary hemodialysis, renal function improved so that 3 weeks after transplantation the B. U. N. was 26 mg per 100 ml and serum-creatinine 0.6 mg per 100 ml. The serum-albumin was 3.8 g per 100 ml and urinary protein was less than 100 mg per 24 hours. Qualitative tests for urinary protein remained negative and 14 months after transplantation urinary protein excretion was less than 30 mg per 24 hours. The serum-albumin was 4.3 g, cholesterol was 157 mg, and trigly cerides were 76 mg per 100 ml.

Serum-creatinine was 0.4 mg per 100 ml. and creatinine clearance was 146 ml per minute per 1.73 sq. m. He has grown 4 in. in the 14 months since transplantation.
VII. Discuss the main subject of the report.

VIII. Read and translate the following text:

POST-TRANSPLANTATION PANCREATITIS

This 33 year-old female was referred to Wayne State University Transplant Service because of endstage renal disease which was thought to be secondary to systemic lupus erythematosus. The latter had been diagnosed eight years previously, but a biopsy of the kidney had never been performed. Prior to transplantation, the serum calcium level was 9.2 mg per cent and the phosphorous value, 5.3 mg per cent. She received hemodialysis therapy for five months prior to renal transplantation.

Transplantation of a cadaver kidney was done on 22 June 1978. Post-operatively, she was oliguric and had a urinary tract infection caused by Escherichia coli. This was treated with ampicillin. Immunosuppression consisted of azathioprine and methylprednisolone. Urinary output gradually increased, and renal function improved to the point that hemodialysis was no longer required. However, the creatinine value did not fall any lower than 5.2 mg per cent. She was discharged three weeks post-operatively but was readmitted four days later because of a temperature of 101.2 degrees F., pain in the lower part of the abdomen and nausea, with a white blood count of 24, 100 per c. ml. Results of the urine culture were negative.

Serosanguineous material obtained at culdocentesis revealed gram-negative rods and cocci on smear. Treatment was instituted with penicillin and cephalothin. Steroid pulses and irradiation of the graft were also administered for rejection. Her condition improved, and she became afebrile. At the time of discharge two weeks later, the serum creatinine level was 3.8 mg per cent.

IX. Speak on the items:

1. The diagnosis of the disease.
2. Transplantation of a cadaver kidney.
3. Readmission to the hospital.
4. The improvement of the patient's condition.

UNIT 6

Texts: 1. Innervation of the Eye.
2. Hazards of Systemic Medication in Open-Angle Glaucoma.
Word-Building Elements: Term-element «myo».
Grammar: Participle II and Its Functions.

Pre-Text Assignments

I. Learn the following words and word combinations:

Contractile [kən'træktəl] сократительный
Contractile tissue is the tissue which is able to contract.
Iris [ˈaɪrɪs] радужная оболочка глаза
Iris is situated behind the cornea.
Adrenergic [ædriːˈnɔːdʒɪk] относящийся к нервам
The radial muscles are innervated by adrenergic fibers.
Oculomotor nerve [ˌɔkjʊləˈmɔutə] глазодвигательный нерв
Oculomotor nerve is the nerve pertaining to the eye movement.
To instill [ɪnˈstɪl] накапать по капле, влиять по капле
You must not read when your eyes are instilled.
Mydriasis [ˌmɪdriəˈæsɪs] расширение зрачка
Mydriasis normally takes place as the eye adjusts its vision in a
darkened room.
Miosis [maɪˈəʊsɪs] сужение зрачка
Miosis occurs in response to light.
Suspensory [səsˈpɛnsərɪ] поддерживающий
The fibers of the suspensory ligament attach this capsule to the cilia-
ry body.
Glaucoma [ɡlɔːˈkoumə] глаукома
«Hardening» of the eye-ball is called glaucoma.

II. Form new terms adding the term-element «myo»-. Memorize the meaning of the
term-element «myo»- мышца:
albumin, blast, Bradia, cerosis, Diastasis, edema, atrophy, plastic, cyte

III. Analyze the structure of the following terms:
intraocular, filtration, oculomotor, parasympathetic, cycloplegia, cholinergic, adjustment, reostigmine, innervation, neogenesis.

IV. Match the following English word combinations with the Russian ones:
1. pupil constriction 1. волокно, выделяющее адреналин-
вое вещество
2. intraocular muscle 2. внутриглазная мышца
3. adrenergic fiber 3. средства, сужающие зрачки
4. miotic drugs 4. сужение зрачка

V. Find substitutes for the following word combinations:
1. dilatation of the pupil 1. oculomo-
2. activated or transmitted by acetylcholine 2. miosis
tor
3. pertaining to eye movements 3. ganglion
4. constriction of the pupil 4. mydriasis
5. any mass of gray nervous substance which serves as a centre of nervous influence 5. cholinerg-
ic
6. the innermost tunic and perceptive structure of the eye, composed of nervous tissue 6. retina

VI. Put in the required words from those given in the right column:
1. The function of the ... is to adjust the amount 1. retina
   of light reaching the retina.
2. ... occurs under stress, pain and strong emotions 2. vision
   and under the influence of certain drugs.
3. ... occurs under the influence of cholinergic drugs. 3. miosis
4. By increasing the curvature of the lens, the eye is accommodated for near vision. 
5. The normal eye will bring the images of both near and distant objects to a focus on the retina.

VII. Translate the following sentences. Define the form and functions of Participle II:
1. Tissue therapy is used for the treatment of grave eye diseases.
2. When the patient's abdomen was X-rayed again, it showed some signs of pathology.
3. His vision was further impaired. 
4. A child was thought to have defective vision in both eyes.
5. The iris is composed of thin layers of smooth muscle which control the diameter of the central opening, or pupil. 
6. Miotic drugs when instilled in the eye diminish the increased tension.

INNERVATION OF THE EYE

Autonomic Control of the Intraocular Muscle. The function of the iris, a contractile circular diaphragm that forms the coloured portion of the eye, is to adjust the amount of light reaching the retina. It is composed of thin layers of smooth muscle which control the diameter of the central opening, or pupil. The iris is made up of two types of muscle:
1. The radial muscles, which are innervated by adrenergic fibers. Fibers from the upper dorsal nerves reach the sympathetic chain and pass through inferior cervical ganglion to the middle and superior cervical ganglia to the adrenergic fibers. When these fibers are stimulated, the pupil is dilated.
2. The circular muscles, which are innervated by cholinergic fibers. Fibers, which leave the brain by the oculomotor nerve, pass to the ciliary ganglia and thence to the circular muscle of the iris by way of the cholinergic fibers. When these fibers are stimulated, the pupil is constricted (miosis).

Pupillary Reflexes. Mydriasis (dilatation of the pupil) normally takes place as the eye adjusts its vision in a darkened room. It also occurs under stress, pain, and strong emotions and under the influence of certain drugs. Adrenergic drugs, e.g., epinephrine (when increased in the blood stream) and cocaine and ephedrine (when instilled in the eye), and cholinergic blocking agents, e.g., atropine and homatropine, produce mydriasis.

Miosis (constriction of the pupil) occurs in response to light and as part of the adjustment of the eye to near vision. It also occurs under the influence of cholinergic drugs, e.g., pilocarpine, physostigmine, neostigmine, or morphine.

Accommodation Reflex. The parasympathetic innervation to the ciliary muscle plays an important part in the accommodation of the eye for far or near vision. The normal eye will bring the images of both near and distant objects to a focus on the retina. The necessary adjustment is made by altering the curvature of the lens. Thus images of objects are not blurred, regardless of distance.

The lens is doubly convex, transparent body enclosed in an elastic
capsule behind the iris. The fibers of the suspensory ligament attach this capsule to the ciliary body, which in turn is attached to a circular (ciliary) muscle. The ciliary muscle is composed of smooth muscle innervated by branches of the oculomotor or third cranial nerve.

When the eye is at rest or accommodated for far vision, the lens is kept in a more flattened state by the pull of the elastic fibers in the suspensory ligament. Constant intraocular pressure in the eye keeps the coats of the eyeball distended so that the ciliary body is pulled forward and the fibers of the suspensory ligament remain taut.

Accommodation for near vision is brought about by the contraction of the ciliary muscle upon stimulation of its parasympathetic fibers. The inner edge of the ciliary muscle is drawn inward and toward the lens and slightly forward toward the cornea. This movement loosens the tension of the fibers of the suspensory ligament on the lens, which bulges forward and becomes more spherical, owing to its own elasticity. By increasing the curvature of the lens, the eye is accommodated for near vision. Cholinergic drugs such as pilocarpine, phystostigmine, and neostigmine tend to adjust the eye for near vision. Cholinergic blocking agents such as atropine and related drugs paralyze accommodation and thus fix the eye for far vision. «Cycloplegia» is the term describing paralysis of accommodation.

**Changes in Intraocular Pressure.** The intraocular fluid (aqueous humor) is a limpid, watery substance that fills the space between the cornea and lens (anterior and posterior chambers). It is formed partly by filtration from the ciliary vessels and partly from some secretory activity of the ciliary body. The fluid passes through the posterior chamber and pupil into the anterior chamber. Some of the fluid is absorbed by the blood vessels and some passes through the spaces of Fontana and filters into the venous canal of Schlemm. Faulty drainage of the fluid within the eye may produce increased intraocular tension and «hardening» of the eyeball (glaucoma). Miotic drugs when instilled in the eye diminish this increased tension by drawing the smooth muscle of the iris away from the canal of Schlemm (in the angle formed by the iris and cornea) and establishing better drainage of the aqueous humor through this channel.

**Post-Text Assignments**

I. Skim through the text and find the sentences expressing its central idea.

II. Read the text and find the words pertaining to the structure of the eye. Describe the structure of the eye.

III. Read the item «Pupillary Reflexes» and speak on mydriasis and miosis.

IV. Make up 7 questions on the item «Pupillary Reflex». Be ready to answer the questions.

V. Look through the item «Accommodation Reflex» and answer the questions:

1. What is the accommodation for near vision brought about by?
2. How is the eye accommodated for near vision?
3. How is the eye fixed for far vision?

VI. Write a summary of the text.
VII. Read and translate the following text:

HAZARDS OF SYSTEMIC MEDICATION
IN OPEN-ANGLE GLAUCOMA

Presumably by «incipient glaucoma» we mean a mild elevation of intraocular pressure without abnormality of the optic disc or visual field. We do not mention the angles of the anterior chambers. If the angles are abnormally narrow, caution is indicated in administering drugs which might dilate the pupil and thereby close the angle. If the angles are normally wide and open, no adverse effect on intraocular pressure would be expected from any of the drugs mentioned.

Administration of aspirin, DL-alpha tocopherol, ascorbic acid, niacin, and thyroid has not been implicated in elevating intraocular pressure. In fact, use of ascorbic acid and niacin has been tried in the treatment of glaucoma. It is well known that drugs that dilate the pupil can close the angle in anatomically predisposed eyes with abnormally shallow anterior chambers. Strong anticholinergics, when applied directly to the eye, can also cause a rise in pressure in a significant number of eyes with open-angle glaucoma, presumably by paralyzing the ciliary muscle, but current evidence indicates that antihistaminics such as chlorpheniramine maleate are very unlikely to have adverse influence in patients with open-angle glaucoma.

VIII. Speak shortly on the text according to the following plan:
1. The disease the article treats.
2. The treatment of glaucoma.

SECTION III
THERAPY

UNIT 1

Texts: 1. The Syndrome of Heart Failure.
       2. In Case of a Heart Attack.
       3. Coronary-Artery Disease.

Word-Building Elements: Prefix de-.
Grammar: Participle I and Its Functions.

Pre-Text Assignments
1. Learn the following word- and word combinations:
   Atrium [ˈeɪtrɪəm] предсердие
   Venae cavae [ˈviːneɪkeɪvə] полая вена
   Blood arrives at the right atrium from the superior and inferior venae cavae.
   Ventricle [ˈventrɪkl] желудочек
   The heart moves venous blood into the right ventricle.
   To falter [ˈfɔːltə] колебаться
In health, the heart moves the blood without faltering.
Acquisition [əkwiˈzɪʃən] приобретение, поступление
The acquisition of oxygen in the lungs may be so reduced that the blood pumped into the aorta and the arterial tree may contain more carbon dioxide and less oxygen than it should.
Dyspnea [dɪsˈpniə] одышка
In these cases dyspnea may occur.
Engorged [ɪnˈɡɔːrd] налитый кровью
The causes of dyspnea are excess of carbon dioxide in the arterial blood and reflexes from the lungs whose vessels are engorged and full of blood.
Hypertrophy [haɪˈpɜːtrəfi] чрезмерное развитие
By hypertrophy we mean here the increase in muscle mass.
Failure [ˈfeɪlʃə] недостаточность, отсутствие
The movement of blood from the veins through the lungs and heart and into the arteries and capillaries is slowed down and «failure», or decompensation, is then present.

II. Form new words adding the prefix de-:
compensation, calcify, classed, classify, compose, contaminate, humanize, hydrogenize, odorize, tubation, viscereation.

III. Analyze the structure of the following terms:
inadequacy, cyanosis, oxygenation, myocardium, decompensation, hypertrophy, enlargement, regurgitating.

IV. Match the following English word combinations with the Russian ones:
1. cardiac failure 1. при физической нагрузке
2. right atrium 2. правое предсердие
3. during physical exertion 3. сердечная недостаточность
4. arterial blood 4. артериальная кровь
5. cardiac compensation 5. восстанавливать силы
6. a physiological limit 6. артериальная кровь
7. to restore strength 7. физиологический лимит, норма

V. Find substitutes for the following word combinations:
1. a number of symptoms occurring together and constituting a distinct clinical picture 1. hemo-
2. an external chamber 2. cardiac
3. a vessel which carries blood away from the heart 3. atrium
4. the oxygen-carrying pigment of human blood 4. edema
5. pertaining to the heart 5. syndrome

6. swelling due to accumulation of fluid in the connective tissue 6. artery
7. morbid enlargement of an organ or part 7. hypertrophy
VI. Read and translate the following sentences. Define the form and functions of Participles I in the sentences:

1. Looking at some case reports the doctor explained something to the students. 2. The student is examining the patient together with the doctor-in-charge. 3. As the patient complains of a severe headache the nurse is giving him some medicines. 4. Examining the patient the doctor noticed some changes in his recovery. 5. The moaning patient did not hear when the doctor on duty entered the ward.

VII. Find the Participles and explain their functions in the following sentences:

1. The blood will have less oxygen combined with hemoglobin because the need of the active muscles has withdrawn more oxygen than in a restful state. 2. Cardiac failure may be present when the heart is functioning at 90 per cent efficiency or any fraction of the normal 100 per cent effectiveness. 3. A drug extracted from a plant of the digitalis group is indicated in almost all cases of heart failure. 4. The importance of proper transportation for a seriously injured person cannot be overestimated.

THE SYNDROME OF HEART FAILURE

Cardiac Failure and Its Reasons. In cardiac failure or decompensation the heart, for one or more reasons, is not circulating the blood at a satisfactory rate. Blood arrives at the right atrium from the superior and inferior venae cavae, having made its circuit through the body. The heart moves this venous blood into the right ventricle, through the lungs for gas exchange, and via the left atrium and ventricle into the aorta. In health, the heart accomplishes this without faltering. Thus it does not allow an abnormal amount of blood to accumulate in the veins of the body, in any chambers of the heart, or in the lungs. The rate of flow in health is sufficient to provide normal pressure in the systemic arteries and veins and in the vascular bed of the lungs.

The diseased heart may have such a handicap as to be unable to move the blood satisfactorily. If this deficit is moderate, it may occur only during physical exertion, for example, in climbing stairs or running. Under these circumstances, the muscles of the legs need a faster-moving blood stream because of their greater work. The heart is called upon to speed up the flow. If, by reason of a mechanical handicap such as a leaking or constricted valve, the heart cannot increase its output to meet the demands of the muscles, then the body will suffer from the inadequacy. The same is true when the heart is weak because of a diseased condition of its fibers. The following changes may take place during the period of "failure" of the heart to do its job properly.

1. The capillaries and all veins, minute and large, will contain more than the normal amount of blood.
2. The hydrostatic pressure will be greater than normal in these areas.
3. The blood in these areas will have a greater amount of carbon dioxide and waste products of the muscles.

52
4. The blood will have less oxygen combined with hemoglobin because the need of the active muscles has withdrawn more oxygen than in a restful state.

5. The removal of carbon dioxide and the acquisition of oxygen in the lungs may be so reduced that the blood pumped into the aorta and the arterial tree may contain more carbon dioxide and less oxygen than it should.

6. Cyanosis may be seen in the lips, mucous membranes, nail beds, and some areas of the skin. The cause is insufficient oxygen saturation of the hemoglobin.

7. Dyspnea may occur. The causes are excess of carbon dioxide in the arterial blood and reflexes from the lungs whose vessels are engorged and full of blood.

8. Edema may be present, involving not only the lung tissue but also the ankles, the legs, liver, and sometimes all areas below the heart. Fluid may exude into the air sacs of the lungs, where it may be heard with the stethoscope, or later, in severe cases such as gargling, by the unaided ear. Water is caused to leave the capillaries and accumulate in the tissues.

**Cardiac Compensation.** We speak of the heart as being compensated when it is able to meet its responsibility quite well. By hypertrophy (increase in muscle mass) and dilatation, both causing enlargement, it compensates for its defect (a stenosed or regurgitating valve) or for the extra load imposed by high blood pressure in the arteries.

If, for example, the normal output of the heart of an individual at rest is 60 ml, and a leaky valve allows 20 ml to flow backward into the preceding chamber through which it had just passed, that chamber may enlarge to hold 80 ml or more. If it then ejects this new amount, and 20 ml returns through the faulty valve, the effective propulsion is in the original normal amount, 60 ml. The chamber has compensated for the defective valve. The compensated heart, with a normal rhythm (regular pulse) and satisfactory rate, needs no specific medication.

**Cardiac Decompensation.** There is, however, a physiological limit to which a heart is able to compensate for the burden placed upon it by certain disease states. If the burden upon the myocardium is too great or lasts too long, the muscle may become so fatigued that it cannot accomplish what it did earlier. It cannot produce the vigorous contractions to expel, with each beat, all or nearly all the blood that it contains. Then some blood is always present within the chambers, contributing to the enlargement. The movement of blood from the veins through the lungs and heart and into the arteries and capillaries is slowed down, and «failure», or decompensation, is then present. Cardiac failure may be present when the heart is functioning at 90 per cent efficiency or any fraction of the normal 100 per cent effectiveness. The heart need not have lost all, or even most, of its power to circulate blood in order to be termed a «failure heart».

**Drugs Used in Cardiac Decompensation.** A drug extracted from a plant of the digitalis group is indicated in almost all cases of heart failure.
If correctly used, a drug of this group will usually restore so much functioning strength to the weakened heart muscle that a patient who has been a semi-invalid or moribund in acute failure may live many years with quite adequate heart action.

Post-Text Assignments

I. Skim through the text and find sentences expressing its main idea.

II. Read the item «Cardiac Failure and Its Reasons». Define the main idea and answer the questions:

1. What is the reason of cardiac failure? 2. Where does the blood arrive to the right atrium from? 3. Where does the heart move the venous blood to? 4. What is the rate of flow in health and what does it provide? 5. What do we observe in the diseased heart? 6. When does this deficit occur? 7. What is the heart called upon? 8. When does the body suffer from inadequacy? 9. What changes may take place during the period of «failure»?

III. Read the item «Cardiac Compensation» and answer the questions:

1. When do we speak of the heart as being compensated? 2. How does the heart compensate hypertrophy and dilatation? 3. What is the normal output of the heart of an individual? 4. Does the compensated heart with a normal rhythm and satisfactory rate need any specific medication?

IV. Read the item «Cardiac Decompensation». Be ready to answer:

1. What do we call cardiac decompensation? 2. When may cardiac failure take place? 3. What heart is called «a failure heart»? 4. What drugs are indicated in cardiac decompensation?

V. Look through the text once again and write shortly about cardiac failure and its reasons.

VI. Speak on the following items:

1. Cardiac failure and its reasons.
2. Changes which take place during the failure of the heart.
3. Cardiac compensation.
4. Cardiac decompensation.
5. Treatment of cardiac decompensation.

VII. Read and translate the text:

IN CASE OF A HEART ATTACK

Soviet heart specialists have elaborated a system of treatment for heart attacks. The main thing is urgent medical assistance, prevention and treatment of the dangerous complications — cardio-vascular insufficiency, cardiogenic shock, disruption of the heartbeat rhythm and thromboembolism. Primarily, the system is hinged on early hospitalization—right when the heart attack begins. And so the Soviet ambulance has special heart attack treatment teams that can get to the person as quickly as possible and give first aid even while the patient is on the
way to the hospital in the ambulance, which has diagnostic and treatment instruments.

This type of team (doctor, assistant and attendant) is the first link. The second is the intensive care ward at the clinic, where the most sophisticated methods of diagnosis and treatment are used.

VIII. Speak about treatment of heart attacks.

IX. Read the text «Coronary-Artery Disease» and speak about the troubles of the patient suffering from this disease:

CORONARY-ARTERY DISEASE

Symptoms. The symptoms of coronary-artery disease depend on the previous state of the heart, the amount of coronary involvement, and the nervous make-up of the patient. The pre-eminent symptom in coronary-artery disease is pain. Its location is important. Substernal pain is more significant than precordial pain. It is usually pressing, constricting, and vise-like rather than sharp, lancinating, or stabbing. Furthermore, it usually occurs upon effort and excitement and, occasionally, after meals. The combination of exertion after eating will usually precipitate an attack in any patient with this condition. The pain may radiate to the left arm, to the left side of the back, neck, and shoulder, to both shoulders, or to both arms, or extend to the neck and chin. In the anginal syndrome the pain lasts about five minutes and not over fifteen and usually disappears upon resting; in myocardial infarction, the pain is severe and lasts from two hours to several days and is not relieved by rest. Occasionally it may be accompanied by shock. In the intermediate group, the pain lasts from fifteen minutes to two hours without electrocardiographic changes. This may indicate the presence of the pre-coronary occlusion state (so called coronary failure) or it may be a myocardial infarction in a «silent area» of the heart. These attacks continue until a major occlusion or a myocardial infarction occurs. It is important to recognize this intermediate group in order to keep the patient in bed for two or three weeks and so postpone the development of a major catastrophe.

With the onset of the pain, there may also be some shortness of breath. If the attack is a severe one, there may also be sweating and collapse. The patient with the anginal syndrome usually stops whatever he is doing and remains in a frozen, immobile state. The patient with myocardial infarction, on the other hand, will very often be restless and walk around in an effort to «walk off the pain», and to overcome the feeling of angor animi. Aerophagia and belching are frequent concomitants of the attack.

The signs will depend on the previous state of the heart and the severity of the coronary-artery disease.
UNIT 2

2. Problems of Atherosclerosis.

Word-Building Elements: Term-elements -<sis>, -<osis>.
Grammar: Present Perfect Active and Passive.

Pre-Text Assignments

I. Learn the following words:

Atherosclerosis [əθərəˈskɔrəs] атеросклероз
Atherosclerosis causes more deaths in the United States than any other group of diseases.

Atheromatous [æθəˈrɒmətəs] атероматозный
High cholesterol levels are associated with increased amounts of the atheromatous materials in the arterial walls.

Thrombosis [θrəmˈbɒsis] тромбоз
The formation or presence of a thrombus in a blood vessel is called thrombosis.

Saturated [ˈsætʃərətɪd] насыщенный чем-либо
Fats composed of saturated fatty acids cause increases in cholesterol blood levels.

Utilization [ˌjuːtɪlɪˈzeɪʃən] использование, применение
Utilization of some vitamins is very useful for little children.

II. Read and translate the terms containing the term-elements -<sis>, and -<osis>.
Memorize the meanings of the term-elements -<sis> состояние and -<osis> болезненное состояние:

fibrosis, thrombosis, atherogenesis, synthesis, atherosclerosis, neurosis, psychosis, prestasis, stasis.

III. Analyze the structure of the following words:

essential, natural, abnormal, arterial, preventable, absorption, unsaturated, atheromatous, producing, increasing.

IV. Match the following English word combinations with the Russian ones:

1. to cause death 1. поражать что-либо
2. utilization of smth 2. вызвать смерть
3. to elevate cholesterol level 3. применение чего-либо
4. to reduce blood cholesterol 4. уменьшать содержание холестерина в крови
5. to affect smth 5. повышать холестерин в крови

V. Find substitutes for the following word combinations:

1. hardening and degeneration of arterial walls 1. atheroma
2. the formation or presence of a thrombus in a blood vessel 2. thrombosis
3. the principal animal stérol 3. cholesterol
4. degeneration of coats of blood vessels 4. atherosclerosis
5. morbid condition or diseased state 5. affection
VI. Translate the following sentences. Pay attention to the Present Perfect Active and Passive:

Present Perfect Active — have/has asked
Present Perfect Passive — have/has been asked

1. Since the day of discharge from the hospital patient Orlov has never complained of any pain in his heart. 2. Of late more and more means have been developed for reducing the synthesis of cholesterol in the organism. 3. Soviet medicine has made great progress in treating many diseases. 4. Several products containing plant oils with unsaturated fatty acids have recently been made available. 5. Corn oil has been shown to lower cholesterol levels and is now used by some individuals. 6. The doctor has prescribed him some tranquillizing preparations. 7. Soviet therapists have proved that spasms are largely due to disturbances in the central nervous system.

ATHEROSCLEROSIS

The diseases associated with the condition commonly known as «hardening of the arteries» cause more deaths in the United States than any other group of diseases. Atherosclerosis is the process and result of the accumulation of fats and fatlike substances (lipoids or lipids) within the walls of arteries. Among these substances are cholesterol and phospholipids, present also in the blood plasma of all persons. High cholesterol levels are associated with increased amounts of the atheromatous materials in the arterial walls and with the complications of this pathological condition. The disease affects the coronary arteries notably, giving rise to the angina pectoris, coronary thrombosis, abnormal heart rhythms, as well as weakness and failure of the heart.

The causes and methods of prevention of atherogenesis have been under increasingly intensive study for many decades. In recent years it has been shown that the cholesterol level in the blood rises with increases in the amount of ordinary fats in the diet. Fats that contain unsaturated fatty acids cause smaller increases in cholesterol blood levels than do the fats composed of saturated fatty acids. Corn oil, certain other vegetable or plant oils, and certain fish oils are example of unsaturated fats containing unsaturated fatty acids and producing smaller rises in blood cholesterol. Indeed, corn oil has been shown to lower cholesterol levels and is now used by some individuals in the belief that they may be spared much, if not all, of the atherosclerosis they may ordinarily expect. The fats of animals (even in the «lean meats»), milk and egg-yolk products (including butter), and, to a slightly lesser extent, shortenings such as oleomargarine are mainly saturated or hard fats and definitely elevate cholesterol levels.

Several products containing plant oils with unsaturated fatty acids, principally linoleic, have recently been made available. This and certain other acids have been shown in animals to be necessary dietary factors, comparable to essential amino acids. Since pyridoxine (vitamin B₆) is required for the proper utilization of these essential vegetable fatty acids, it is incorporated in many products containing these acids. Among these
are Linodoxine and Arcofac. Lenic capsules contain the fatty acids without pyridoxine. These products are of little value unless the saturated fat in the diet is markedly reduced. This alone is usually somewhat effective.

**Measures for Lowering Blood Cholesterol.** An effective but not a very extensively used agent for lowering blood cholesterol is nicotinic acid or niacin (a vitamin of the B complex). It causes flushing at first but doses of 3 to 6 gm daily in divided amounts orally may be given for long periods of time with apparent safety and continued effect.

Another agent for attempting to reduce blood cholesterol is a 20 per cent suspension of beta-sitosterols (Cytellin), the sterols of certain plants. It is used in a dose of 15 to 30 ml. before meals. It is thought to suppress absorption of cholesterol from the intestines, but reports have been conflicting and it is not widely used.

A new drug, triparanol, is now the leading agent for reducing the cholesterol level in the blood.

It is generally agreed that atherosclerosis, universally present, is a preventable process or that it can some day at least be significantly inhibited.

**Post-Text Assignments**

I. Skim through the text and find the sentences expressing the main idea of the text.

II. Read the text closely and answer the following questions:


III. Read the item «Measures for Lowering Blood Cholesterol», and speak about agents lowering blood cholesterol.

IV. Pick out from the text all the words pertaining to atherosclerosis. Describe the disease and its prevention using those words.

V. Translate into English:

1. Атеросклероз— заболевание артерий, сопровождающееся отложением в их стенках холестерина о последующим развитием склеротических изменений. 2. Нарушение жирового обмена, особенно холестеринового, является одной из причин развития атеросклероза. 3. Большое значение в развитии атеросклероза имеет гипертоническая болезнь. 4. Повышенное артериальное давление в сосудах создает более благоприятные условия для отложения холестерина из крови во внутреннюю оболочку артерий. 5. В развитии атеросклероза имеет значение нарушение деятельности центральной нервной системы, регулирующей обмен веществ, в том числе и холестериновый. 6. Повышение артериального тонуса, сосудистые спазмы, возникающие в результате нарушений функций коры головного мозга и вегетативной нервной системы, имеют большое значение в развитии атеросклероза.

VI. Look through the text and write a Summary of the text.

VII. Read and translate the following text;
PROBLEMS OF ATHEROSCLEROSIS

Atherosclerosis, together with cancer, is still the greatest unsolved problem of medicine today.

During the past ten years the incidence of coronary heart disease has doubled in West Germany. There are some 250,000 myocardial infarctions increased fivefold between 1952 and 1974. Comparable figures exist for other westernized societies.

In recent years science has made progress in the field of degenerative and cardio-vascular diseases. There have been advances in pathogenesis and aetiology, and also in the treatment and rehabilitation of atherosclerotic occlusive diseases. In these areas further successes in primary and secondary prevention are in sight. The results obtained by the North Western University of Chicago, which show a marked reduction in myocardial infarctions in recent years, are encouraging. One of the most important tasks of the future is the primary prevention of atherosclerotic impairment of blood flow. This is ultimately a question of health education. The public must be motivated to accept advice on the prevention of atherosclerosis. They must know both the general and individual risk factors to which they are exposed. Atherosclerosis is a life-long process. Exerting an influence on its course should not be left to the geriatriist but indeed should be the concern of paediatrist. Atherosclerosis still heads the morbidity and mortality statistics of the industrial nations and will always exist in its various forms in spite of everything that is done to control it.

The importance of secondary prevention emerges from the above facts. Is it possible to arrest the progress of atherosclerotic process and to mitigate the effects of atherosclerotic disturbances of blood flow? In what way can atherosclerotic deformation of arteries be influenced? What is the morphological substrate for possible enzyme repression? At what point do such preventive measures as diet and the normalization of increased blood pressure and pathological lipoprotein patterns impinge on the process? What can be achieved with drugs such as antihyperlipidaemic agents, anticoagulants, fibrinolytics, or platelet agglutination stabilizers? Do the morphologically determinable regression and the healing process have any anatomicopathological significance for the clinical course of atherosclerotic disease? Animal experiments may become important in the discussion of these problems, provided they are interpreted with due caution. The large scale natural experiments to which whole populations were subjected during the wartime years of shortage and the postwar period may provide important insights into the pathogenesis of atherosclerosis under conditions of affluence.

Although it would seem from these studies that little can be done to influence lesions when they are advanced, pronounced, calcified, ulcerated and thrombosed, the reversibility of lipid and lipoprotein deposits in animals, and probably also in man, is a cause for optimism and justifies continued intensive research in this field.

VIII. Discuss the problem of atherosclerosis according to the plan:

1. Atherosclerosis the greatest unsolved problem of medicine today.
2. The progress in the treatment of atherosclerotic diseases.
3. The most important task of the future in treating atherosclerosis.

UNIT 3

2. Additional Material.
Word-Building Elements: Prefix counter-., Term-element «cardio>-.
Grammar: Participle I as an Attribute.

Pre-Text Assignments

1. Learn the following words and word combinations

Angina pectoris [æn'dʒaina 'pektɔrɪs] грудная жаба
Angina pectoris is a disease marked by spasmodic suffocative attacks.
Affliction [ə'flɪkʃn] болезненное поражение, боль.
Many patients suffer from this severe affliction.
Stabbing pain ['steɪbɪŋ] колючая боль
The pain is usually severe, sharp and stabbing.
Excruciating pain [ɪks'krjuːːtɪŋ] мучительная боль
Some patients experience excruciating pain even while slowly walking.

Vasodilator [ˌvæsə'dælɪtə] сосудорасширяющий
Patients suffering from angina pectoris must employ vasodilator drugs.

Obese [ˈouːbiːs] тучный, страдающий ожирением
Some obese people suffer from angina pectoris, too.

11. Form new words adding:

a) the prefix counter-.. Memorize the meaning of the prefix counter-
противо-, против:
act, action, attraction, check, irritant, extension, irritation, poison,
puncture, opening, stain, fraction.

b) the term-element cardio-.. Memorize the meaning of the term-
element «cardio»- сердце:
hepatic, aortic, dynamics, cirrhosis, centesis, accelerator, nephropathy,
pathy, pulmonary, plasty, puncture, renal, vascular, spasm, sclerosis,
dilator.

III. Analyze the structure of the following terms:

vasodilator, atherosclerosis, myocardium, prevention, vasoconstricting,
excitement, physiological, outnumber, ascending, aggravate, descending.

IV. Match the following English word combinations with the Russian ones:

1. angina pectoris 1. вызывать боль
2. to cause a pain 2. лечение приступа
3. treatment of the attack 3. сосудорасширяющие лекарства
4. vasodilator drugs 4. за грудиною
5. under the sternum 5. грудная жаба
V. Find substitutes for the following word combinations:

1. broad vertical bone to which the ribs are attached in front.
2. causing dilatation of blood vessels
3. pertaining to or full of vessels
4. a manifestation of disease
5. encircling in the manner of a crown
6. muscular organ by rhythmical contraction and expansion, forcing the blood through the circulatory system.

1. vascular
2. symptom
3. vasodilator
4. coronary
5. heart
6. sternum

VI. Translate the following sentences. Pay attention to the place occupied by Particle 1 in the sentences:

1. The physiological disturbance underlying angina pectoris is a disproportion between the oxygen supply and needs of myocardium. 2. The exertion threshold varies among individuals, depending upon the severity of the vascular disease. 3. Occasionally angina attacks will occur in patients who are not undergoing unusual exertion. 4. The circumstances attending the onset, the duration and severity of the pain, and the evaluation of the clinical features usually yield the correct diagnosis.

**ANGINA PECTORIS**

Pain may arise in a muscle when it is made to contract repeatedly or to remain contracted in a sustained state, while its arterial blood supply is diminished below physiological limits. When this situation occurs in the heart, which is primarily a muscle, we apply the term angina pectoris, which means «pain of the chest». Other conditions may cause chest pain in the same areas and must be differentiated from true angina (of cardiac origin). This is seldom difficult for the physician.

Angina pectoris is most commonly seen in patients past 40 years of age, and men outnumber women with this affliction. It typically occurs as a severe, sharp, oppressive, squeezing, or knifelike stabbing pain in the front (anterior) of the chest along and under the sternum. It usually comes after the person has exerted his heart and exceeded the physiological limit of the blood supply to the heart muscle. This exertion threshold varies among individuals, depending upon the severity of the vascular disease that causes the pain. Some patients will experience an anginal «attack» after running or ascending stairs. Others will experience excruciating pain even while slowly walking. Most sufferers are pain-free when they are resting; hence, mild or moderate shooting or continuous pain occurring at rest and not aggravated by effort is probably not angina. When angina occurs, relief usually comes with rest. The patient instinctively stops his activity. The pain lasts variably up to half an hour, usually much less. The attack causes no damage, if exertion is ceased. The patient must either live within the limitation of the blood supply of his heart muscle, or employ vasodilator drugs. The diminished blood supply is caused usually by atherosclerosis, with thickening of the walls of the arteries and arterioles and resultant narrowing of their
lumen, or «bore». These blood vessels carry less blood than in health and their capacity in terms of flow is exceeded by the needs of the working myocardium during periods of greater activity.

The prognosis in angina pectoris is extremely variable, but any patient, whether his symptoms are mild or severe, may die suddenly or develop a crippling coronary thrombosis (heart infarct). It is therefore extremely important that these patients be advised as to their manner of living, and a member of the family should be taken into the physician’s confidence and informed of the possibilities of sudden death. Many patients, by living within the limits of their cardiac reserve, may live for many years after the onset of angina.

The treatment of angina may be divided into two phases: the treatment of individual attacks, and the prevention (or at least a diminution in the number) of possible attacks. The use of nitroglycerin tablets in 1/100 or 1/200 grain (0.6 or 0.3 mg.) is the treatment of choice in acute attacks. The patient should be instructed in their use. He will learn to place a tablet under the tongue at the sign of distress and to stop and rest. He may know that certain types of exertion, such as climbing a flight of stairs, can induce an attack, and that by placing a pellet under his tongue a few seconds before the ascent he can prevent the development of pain. The smallest effective dose of nitroglycerin should be used in order to avoid unpleasant side effects. Amyl nitrite is rarely necessary.

In order to prevent attacks, the patient should be advised to avoid exertion, excitement or overeating. His whole manner of living may have to be changed to permit an easygoing existence. Tobacco should be countermanded because of its vasoconstricting action.

Frequent small feedings, should as opposed to three large meals, be encouraged, and weight reduction is very important in the obese. The use of a vasodilatating drug such as aminophylline (3 grains, or 0.2g.) is of value.

Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.
II. Pick out the words characterizing the condition of a patient suffering from angina pectoris. Learn them by heart.
III. Read the text and answer the questions:


IV. Read the text closely and write a summary.
V. Discuss the problem of angina pectoris according to the plan:

1. The nature of pain intrinsic in angina pectoris.
2. The prognosis in angina pectoris.
3. The phases in treatment.
VI. Read and translate the text:

Coronary bypass operations are well founded; however, many questions still remain. One of this is the ability to predict risk preoperatively. A small subset of patients with unstable angina pectoris were studied. 124 patients were studied; 53 patients responded to medical therapy and 71 patients continued to have angina. Patients underwent cardiac catheterization three to 18 days after admission and had coronary bypass within 14 days of catheterization. A standard operation was performed using triple grafts in 38 patients, double grafts in 58 patients and a single graft in 22 patients.

Patients were then analyzed as to outcome and the presence of other risk factors. Age, sex, other vascular disease, diabetes mellitus, lipid levels, obesity, family history, smoking, previous infarction, congestive failure, heart size, left ventricular and diastolic pressure, ejection fractions and mitral disease were found to be unrelated to the surgical result or mortality. Failure of medical therapy, hypertension and triple vessel disease, however, were statistically important. Although hypertension alone was not a risk, when associated with other factors it carried risk 11 times that for normotensive patients.

As results of other studies have shown, triple vessel disease carries a higher risk, as does left main coronary artery disease. The combination of three vessel disease, hypertension and failure to respond to medical therapy during unstable angina carries a high operative mortality.

VII. Entitle the text.

VIII. Discuss the main thought of the text.

UNIT 4


Pre-Text Assignments

1. Learn the following words:

Hypertension ['haipa'tenʃən] повышенное давление
Especially high blood pressure is observed in hypertension.

To tolerate ['tələreit] терпеть, выносить
Some persons are able to tolerate the vascular effects of stress much better than the others.

Elasticity ['elæs'tistik] упругость, эластичность
Hypertension is associated with loss of elasticity of the aorta and its main branches.

Frustrated [frə'streitid] расстроенный
He became frustrated by his endless and inconclusive work.

Heredity ['hɛriditi] наследственность
Speaking about heredity in medicine we mean some inherited or familial diseases which are transmitted from one or both parents to offsprings in the chromatin of the sex cell.
II. Form new terms adding the prefixes hyper- and hypo-. Memorize the meanings of the prefixes hyper- чрезмерный and hypo- пониженный:

a) tension, plastic, sensitive, systolic, tense, vascular, toxicity, thrombocytemia, susceptibility;
b) acidity, adrenalism, alimentation, cholesterolemia, cytosis, glycemia, hepatitis, immunity, insulinism, leukocytosis.

III. Analyze the structure of the following words:

inherited, arterial, abnormality, reaction, systolic, ganglionic.

IV. Match the following English word combinations with the Russian ones:

1. a life span 1. высокое кровяное давление
2. a routine examination 2. этиология гипертонии
3. high blood pressure 3. особо чувствительный
4. the etiology of hypertension 4. продолжительность жизни
5. highly sensitive 5. обычное обследование

V. Find substitutes for the following word combinations:

1. pertaining to artery 1. sensitive
2. blood pressure in the arteries 2. aorta
3. able to receive or transmit a sensation 3. heredity
4. the principal artery through which the blood leaves 4. arterial pressure
5. transmission of body qualities from parent to offspring 5. arterial

VI. Translate the following sentences. Pay attention to the construction «Nominative with the Infinitive»:

Nominative with the Infinitive
Подлежащее + вводящий элемент + инфинитив
He is said to be a good surgeon
Говорят, что он хороший хирург.

1. The grippe is known to cause serious complications. 2. Blood transfusion is stated to be effective in acute anemia and shock. 3. A careful examination is known to lead to a correct diagnosis. 4. The patient is expected to recover soon. 5. Analysis of the results is known to show a definite, moderate, restrictive type of defect in pulmonary function in almost all patients. 6. Respiratory function is known to vary considerably. 7. Penicillin is considered to be the most effective drug in the treatment of inflammation. 8. The patient is known to complain of pain in the left side of the lower jaw over a prolonged period.

HYPERTENSION

The normal arterial blood pressure in the human being is so variable, that it is very difficult to lay down criteria defining when hypertension, or high blood pressure, is present. The difficulty is important when hypertension may exist without exhibiting symptoms. The blood pressure abnormality is discovered only incidentally during a routine examination performed for military, life insurance, or other periodic physical evaluation. Usually when the blood pressure is higher than 140 mm Hg systolic and/or 90 mm Hg diastolic it is considered elevated and abnorm-
a1. With a rise in blood pressure, life span may be reduced. Therefore, hypertension should be evaluated fully and, when appropriate, treated.

Several factors, although not directly involved, may influence the onset and development of hypertension.

**Profession.** Occupation does not play a significant role in the etiology of hypertension. The reaction of the individual to his environment can greatly affect his vascular system, even more than the specific physical or intellectual demands of the individual’s job. For example, the executive who has the ability to face major decisions without getting upset may be able to tolerate the vascular effects of stress much better than the person who becomes frustrated by his endless and inconclusive work.

Among hypertensive patients, many are conscientious and perfectionistic, exhibiting high ideals, a strong devotion to duty, and honesty: people who are always dissatisfied with their achievements and are often highly sensitive to criticism.

**Age.** Hypertension of unknown etiology is less frequent before age 30 and after age 55. Hypertension beginning in the older age group is more likely to be systolic in type and associated with loss of elasticity of the aorta and its main branches.

**Race and Sex.** Both sex and race seem to play a role in the incidence and severity of hypertensive vascular disease.

American Negroes have a greater incidence of hypertension. It is because the Negro is trained by experience from earliest childhood in the suppression of aggression.

Hypertension appears to be more common in the female than in the male. However, it is better tolerated during the child-bearing years in the female than is hypertension in the male. Following the menopause, the incidence of hypertension in women parallels and may even exceed that in the males.

**Heredity.** An individual, by reason of inherited traits for hypertension including race and sex, would manifest early in life greater rises in blood pressure in response to environmental stimuli than his counterpart born without these genetic traits.

**Exercise.** Hypertension may be less frequent and occur at later ages in those who have been more physically active.

**Altitude.** Hypertension is less common in those persons who live at high altitudes.

---

**Post-Text Assignments**

1. Skim through the text and find the sentences expressing its central idea.

2. Read the text closely and define the main factors influencing the development of hypertension.

3. Read the items «Profession» and «Age» and answer the questions:

   1. Can the reaction of the individual to his environment greatly influence his vascular system or not? 2. Who is subject to hypertensive disease? 3. How does the age influence the etiology of the disease?

4. Read the item «Race» and «Sex» and make up 5 special questions covering the material of the item.
V. Find the constructions «Nominative with the Infinitives» in the text.

VI. Translate into English:

1. Гипертония — заболевание, основным симптомом которого является повышенное артериальное давление. 2. От гипертонической болезни следует отличать так называемую симптоматическую гипертонию, когда гипертония является только симптомом какого-либо другого заболевания. 3. Возникновение гипертонической болезни вызывается перенапряжением коры головного мозга, резкими психическими переживаниями. 4. Повышенным считается такое давление, когда максимальное давление превышает 140 мм рт. ст., а минимальное — 90 мм.

VII. Read and translate the text:

**DRUG TREATMENT OF HYPERTENSION**

The medical treatment of hypertension has been changing rather rapidly within the past several years. Several newer and important types of drugs are available: 1) rauwolfia group; 2) the «thiazide» group of diuretics; 3) hydralazine; 4) the ganglionic blocking agents; 5) the most recent additions, guanethidine and bretulium tosylate; 6) veratum alkaloids; and 7) a miscellaneous group.

Medical treatment should include readjustment in personal situations where needed. A change of jobs or of attitudes at work may be indicated, or family difficulties, etc., may require changes.

VIII. Speak about the drugs used in treatment of hypertension.

IX. Read, translate and retell the text:

Hypertension is one of the most prevalent diseases in medical practice. If arterioles did not offer some resistance to the flow of blood, the individual could not survive. The heart would pump blood far too freely into the capillary network.

The hydrostatic pressure necessary for many of the vital functions of the body would not be present. These arterioles may be roughly compared to the nozzle of a hose pipe. Both can be adjusted to greater or lesser flow. The degree of peripheral resistance offered by the arterioles collectively in the body determines the amount of pressure we may measure in the larger arteries between the heart and the arterioles. The diastolic pressure is normal if it is between 40 and 90 mm Hg. The normal range of systolic pressure is roughly 90 or 150 mm Hg. It should be remembered that this is attained only for a moment as a sharp peak, with an immediate downward trend to the lowest pressure just before the next beat of the heart. In hypertension the diastolic pressure is of greater importance than the systolic. The blood pressure is progressively reduced as the blood flows toward the capillary bed. The latter is the largest reservoir in the entire vascular system and contains much more blood than the other portions. It should be recalled that it is in the capillary bed where oxygen, carbon dioxide, water, food materials, waste products, drugs, etc. are exchanged between the blood and the cells of the body.
UNIT 5

Texts: 1. Diabetes Mellitus.
2. Low-Dose Intravenous Infusion of Insulin in Diabetic Coma.

Word-Building Elements: Prefix poly-
Grammar: Noun as Attribute.

Pre-Text Assignment

I. Learn the following words and word combinations:

Diabetes [ˌdaɪəˈbiːtɪz] диабет
Diabetes mellitus is a very prevalent disease.
Sedentary [ˈsedəntərɪ] сидячий
The incidence is high among obese individuals and sedentary workers.
Insulin deficiency [ɪnˈsaɪlɪn] недостаток, нехватка инсулина
Diabetes mellitus is characterized by high blood sugar due to insulin deficiency, insulin resistance and other factors.
Itching [ˈɪtʃɪŋ] зуд
Itching is due to sugar deposits on the skin and valve membrane.
Acidosis [ˈæsɪdɒsɪs] накопление кислот в организме
Ketosis [ˈkɛtəsɪs] накопление кетоновых тел
Acidosis and ketosis may result in coma and death if not treated.
Adrenal glands [əˈdɹɛnl ɡlændz] надпочечные железы
Adrenal glands are situated near kidneys.

II. Form new terms adding the prefix poly-. Memorize the meaning of the prefix poly-

paresis, pharmacy, neuritis, nuclear, serositis, valent, clinic, cystic, dactylitis, glandular.

III. Analyze the structure of the following terms:

hyperglycemia, glycosuria, carbohydrate, secretion, management, intravenous, comatose, acidosis.

IV. Match the following English word combinations with the Russian ones:

1. hereditary factor 1. главный симптом
2. undiagnosed cases 2. фактор наследственности
3. cardinal symptom 3. вводить подкожно
4. to administer smth. subcutaneously 4. эмоциональное напряжение
5. emotional strain 5. больные с неустановленным диагнозом

V. Find substitutes for the following word combinations:

1. a condition in which an abnormal amount of sugar is present in the urine
2. excess of glucose in the blood
3. the separation of various substances from the blood and discharge of the substance elaborated from them

1. secretion 2. glycosuria 3. pancreas
4. a disease, characterized by the presence of excessive amounts of sugar in the urine

5. a large gland that lies behind the stomach

6. a compound composed of carbon, hydrogen and oxygen

VI. Translate the following sentences. Find attributes expressed by nouns. Underline them:

1. The children’s sleeping out of doors always results in most beneficial effects. 2. Pavlov’s work was a great contribution to the science of physiology. 3. Insulin is administered to cause sugar utilization in some cases. 4. In the case of street accident a call is made to the First Aid Station. 5. The patient’s heart disease was influenced by rheumatism. 6. Penicillin therapy having been instituted, the change in the disease course from almost certain fatality to gradual recovery occurred.

**DIABETES MELLITUS**

Diabetes Mellitus is a very prevalent disease. There are more than one million diabetics in the United States, and there are probably another million undiagnosed cases. The disease appears to exhibit a hereditary factor. The incidence is high among obese individuals and sedentary workers under emotional strain.

Diabetes Mellitus is characterized by high blood sugar (hyperglycemia) due to either insulin deficiency, insulin resistance, or excessive secretion of insulin-inhibiting factors, such as a hormone of the anterior pituitary or adrenal glands. Sugar (glucose, a carbohydrate) increases in the blood and overflows into the urine (glycosuria). The loss of carbohydrate causes a voracious appetite, muscular weakness, and fatigue. Water balance is disturbed, and an increased volume of urine (polyuria) and increased thirst (polydipsia) result. Itching is due to sugar deposits on the skin and valvar membranes. The failure of the normal utilization of carbohydrates is accompanied by a faulty metabolism of fats. Instead of the oxidation of fats to carbon dioxide and water, acetone and oxybutyric acid are formed in excessive amounts, accumulate in the blood and tissues, and are excreted in the urine. The presence of these substances in the body produces acidosis and ketosis, which may result in coma and death if not treated adequately. Such cases may be emergencies.

The dietary management of the disease began in the nineteenth century with the recommendations of Drs. Frederick ALLEN and Elliott JOSLIN. Carbohydrate was limited in the diet to 40 g a day. Most of the calories were supplied with protein and fat. Acidosis and coma were frequently encountered. In the young, diabetes was rapidly fatal disease.

Insulin. The hormone insulin, which regulates carbohydrate metabolism, is secreted by the islet cells of the pancreas. In 1889 Drs. Joseph von MERING and Oskar MINKOWSKI removed the pancreas from dogs and produced the cardinal symptoms of diabetes, showing that the pancreas is the source of some substance that protects normal animals from diabetes mellitus. In 1922 Dr. Frederick BANTING prepared
an active extract from the pancreas which was used in the treatment of diabetes. This substance was named insulin. With the discovery of insulin, the treatment of diabetes radically changed. Modern treatment permits much more carbohydrate in the diet (however, still limited), and insulin is administered to cause the utilization of sugar in some cases. Less fat is eaten, and the acidosis that occurs with a high-fat, low-carbohydrate diet is avoided. Insulin is a highly purified extract of the pancreas of domestic animals — hogs, sheep, and cattle — which affects carbohydrate metabolism. It is so standardized that each milliliter contains either 40, 80, 100, or 500 units.

Administration of Insulin. Insulin is administered subcutaneously. This method is satisfactory except for the discomfort and nuisance of repetitious injection. In emergencies the hormone may be injected intravenously. Insulin is not effective on oral administration. Insulin causes a fall in blood sugar. Oxidation of glucose is increased, and there is increased storage of glycerin in the liver and muscles. As the percentage of sugar in the blood falls below the kidney threshold, sugar disappears from the urine. There is no routine dose for insulin. Each case must be studied individually. The dose depends upon the amount of sugar that the patient is unable to metabolize on a maintenance diet. It is advisable to keep the volume to be injected between 0.25 ml.

Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.

II. Explain the processes taking place in the organism of the patient suffering from the diabetes mellitus.

III. Answer the following questions:

1. When did the dietary management of diabetes mellitus begin?
2. What did the diet result in?
3. When was diabetes rapidly fatal disease?
4. What is insulin secreted by?
5. Who produced the cardinal symptoms of the disease?
6. Who prepared an active extract from the pancreas which was used in the treatment of diabetes?
7. When did the treatment of diabetes radically change?

IV. Describe the method of insulin administration.

V. Look through the text and write a summary,

VI. Read and translate the text:

LOW-DOSE INTRAVENOUS INFUSION OF INSULIN IN DIABETIC COMA

Despite available methods of monitoring the clinical and metabolic state of a diabetic in Ketoacidotic coma, uncertainties remain about the optimum dosage of required insulin and the frequency of its administration. Even though the half-life of subcutaneously injected insulin is known to be four to five hours, its absorption rate in Ketoacidotic coma is often unpredictable. Equally unforeseeable are the vagaries of absorption by way of the intramuscular route. Added to these imponderable is apprehension that insulin may become less effective as coma deepens.
Recent reports suggest that much uncertainty can be eliminated by continuous low-dose intravenous infusion of insulin. First reported by Sönksen in 1972, this approach has been tried recently in several medical centres. Three reports, published in the June 29 issue of the British Medical Journal, attest to its success.

From England comes the report of a collaborative project of four hospitals. Thirty-eight comatose diabetics received continuous low-dose insulin infusions at an average hourly rate of 7.2 units. The constancy of this rate was maintained with the aid of a mechanical pump and plastic syringe, the syringe containing 20 ml of a solution of 21 international units of insulin in saline. Five milliliters of this solution was given hourly through a four-way tap into the intravenous fluid line.

The action of insulin began at once, with the fall in plasma glucose level reaching a mean of 58% within four hours. Levels of blood ketones and free fatty acid showed a similar response. Neither previous treatment nor the severity of the diabetes affected the outcome.

A similarly successful outcome is described in a report from Vincent's Hospital in Sydney, Australia. Eleven comatose diabetics with a mean plasma glucose level of 514 mg/100 ml. received constant insulin infusion at a rate of 2.4 units hourly with the aid of a syringe pump or a controlled pediatric drip set. The intravenously administered solution was saline containing 1% to 2% human albumin to prevent insulin adsorption to plastic tubing or glass. There was a continuous drop in plasma glucose level, at a mean rate of 75 mg/hr. Ten of the 11 patients recovered in eight hours.

Equally encouraging is the report from the Glasgow Royal Infirmary. Thirteen patients with a plasma glucose level of 725 mg/100 ml and pH of 7.07 received a mean loading dose of 6.5 units of insulin hourly with the aid of a syringe pump connected to an intravenous infusion by a manometer-connecting tube and a standard V connector. The syringe contained 200 units of insulin diluted with sufficient saline containing 1 gm of salt-free albumin to make 50 ml. Plasma glucose level fell at the mean rate of 101±11 mg/100 ml/hr with the patients recovering within three to ten hours.

The response of Ketosis to treatment was observed by measurements of plasma ketones with paper test strips hourly during the first four hours, then at 6,12 and 24 hours after the beginning of treatment. Readings with paper strips showing absence of ketones with normal pH and ventilation pattern were found in all subjects after a mean duration of 6.4 ± 0.9 hours.

Although hardly a «breakthrough» or a revolutionary development, low-dose intravenous infusion of insulin is an important innovation in the treatment of Ketoacidotic coma. It promises to stabilize what has been hitherto an unpredictable, largely empirical mode of therapy.

**VII.** Pick out the words pertaining to diabetic coma.

**VIII.** Describe the patient in diabetic coma.
UNIT 6

2. Clinical Forms of Pulmonary Tuberculosis.
Word-Building Elements: Suffix -ment.
Grammar: If-sentences.

Pre-Text Assignments

I. Learn the following words and word combinations:

**Tuberculosis** [tjuː,bə:kjuˈləʊsɪs] туберкулез
Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis and characterized by formation of tubercules in tissues.

Insidious onset [ɪnˈsidɪəs ˈɒnˌset] скрытое (постепенное) начало
The onset of tuberculosis is insidious.

Suspicion [səsˈpiʃn] подозрение
If there is any suspicion of TB, the patient is sent to a tuberculosis dispensary.

Surveillance [sərˈvaɪəns] надзор, наблюдение
This patient is under the constant doctor's surveillance.

**In conformity with** smith. [kənˈfɔrəmið] согласно чему-либо
This institute studies the methods of prophylaxis and treatment of TB in conformity with local climatic conditions.

To slash [slæʃ] сніжати, срезать
Considerable improvement in the people's material wellbeing and prophylactic measures have slashed the incidence of TB in our country by half.

II. Form new words adding the suffix -ment:

**Model:** to develop — development развитие
to treat, to punish, to approve, to adjust, to enjoy, to improve, to achieve, to astonish, to attach, to appoint.

III. Analyze the structure of the following words:

widespread, suffering, outpatient, vaccination, uninterrupted, conformity, anti-TB, anti-bacterial, restoration, exceptional.

IV. Match the following English word combinations with the Russian ones:

1. pulmonary tuberculosis
2. to suffer from TB
3. to put the disease into the closed form
4. to be under dispensary surveillance
5. sick benefit

1. болезнь туберкулезом
2. состоять на диспансерном учете
3. туберкулез легких
4. пособие по болезни
5. перевести болезнь в закрытую форму

V. Find substitutes for the following word combinations:

1. an infectious disease caused by Mycobacterium
tuberculosis

1. sweat
2. sudden noisy expulsion of air from the lungs  2. prophylaxis
3. saline fluid secreted by the sweat glands  3. cough
4. prevention of the disease  4. treatment
5. management and care of a patient or the com-
   batting of the existing disorder  5. tuberculosis

VI. Translate the following sentences. Find the Subordinate Clauses. Pay attention to the verb-
   form in the Subordinate Clause:

Pattern: If they come in time, they will watch the operation.
   Если они придут вовремя, они будут присутствовать при
   операции.

1. If he comes with the specific complaint he will be asked to tell
   his symptoms, any treatment or medicine he is taking and how long he had
   had the complaint. 2. If the patient comes for a check up, the interview
   may begin with a series of more general questions about the patient's
   home, work and marital status. 3. If the patient takes this medicine,
   he will recover soon. 4. If a patient complains of pain in his back, he
   may have a broken back. 5. If fibrosis occurs, the patient may recover.
   6. If you carry a man in a correct way, you will cause him the least pos-
   sible discomfort.

VII. Translate the following sentences. Define the functions of «it» in each sen-
   tence;

1. The surgeons entered the operating room. It was light. 2. It is
   three o'clock. It's time to begin the round. 3. It is considered that this
   disease occurs very often. 4. The doctor found it strange that the patient's
   temperature did not fall. 5. It is only 7 o'clock but all the windows of
   the wards are open as the weather is very warm and fine. 6. It is in the
   USSR that the government pays special attention to the health of child-
   ren. 7. If the burden upon the myocardium is too great or lasts too long,
   the muscle may become so fatigued that it cannot accomplish what it
   did earlier. 8. It will be difficult to solve this problem. 9. It is very
   important for the patient's morale that he should know he will return to
   his old job after the disease.

TUBERCULOSIS OF THE LUNGS,

Tuberculosis is a widespread disease which affects different parts of
the body: the lungs, bones and joints, kidneys, spleen, liver, etc. Pul-
monary tuberculosis is the most common form. Tuberculosis is caused
by tubercle bacilli which are found in the sputum of patients suffering
from TB.

The onset of the disease is insidious. The patient usually complains
of slight cough, loss of appetite, fatigue and shortness of breath on exer-
tion. There is a slight rise of temperature. The patient sweats at night
and does not feel rested in the morning.

If the district doctor at a polyclinic has the slightest suspicion of
TB, the patient is sent immediately to a tuberculosis dispensary. If
there is any need, the patient is sent to a special hospital or a sanatorium.
If the patient has TB bacilli in the sputum, then he stays in the hospital for no less than six to eight months. This is sufficient time for the doctors to put the disease into the so-called closed form. After that he is again at the district dispensary (he is treated there as an outpatient for 18 months). After the course of treatment is completed, the patient is kept under dispensary surveillance for three years. Every spring and autumn he has prophylactic vaccinations. Members of his family are also given medical check-ups.

While undergoing the prescribed course of treatment, the patient is paid sick benefits the amount of which depends on the length of uninterrupted service and on whether the patient is a trade union member. The administration has to reserve the patient's job for him for 12 months. It is very important for the patient's morale that he should know he'll return to his old job. This law, adopted several years ago in our country, has made the doctors' task much easier, for the patients calmly take the entire course of treatment.

The prophylaxis of TB starts as soon as a baby is born. Antituberculosis vaccinations are administered to all the babies in maternity homes. After that every year the child is checked for TB. We have a remodeled network of special children's institutions — creches, kindergartens and boarding schools — where children who contacted TB are treated. On the Black Sea coast we have sanatoriums for children suffering from tuberculosis of the bones. Sometimes a child spends several years in such a sanatorium. Just as in the hospital, children of school age do not drop their study, but go from one form to another.

We have a routine — every person over 12 years of age has his chest examined for TB once every two years. That means that every year we check up on 80 mln. people.

Nearly all USSR Republics have their own TB research institutes, which study the methods of prophylaxis and treatment of TB in conformity with local climatic conditions. The All-Union Tuberculosis Research Institute coordinates the work. We produce enough of the latest anti-TB preparations to treat all our patients.

We are also solving new surgical methods of treatment, both independent and combined with modern anti-bacterial methods.

The treatment of TB of bones and joints, including restoration of the affected joints and bones of the spine, is the most important problem. We have some very promising results here.

Considerable improvement in the people's material well-being and prophylactic measures have slashed the incidence of TB in our country by half. Our most urgent task is to make TB rare and exceptional.

Post-Text Assignments

I. skim through the text and find the sentences expressing its main idea.

II. Find the English equivalents in the text and translate the sentences containing them:

туберкулезный диспансер, скрытая форма болезни, диспансерное наблюдение, профилактика туберкулеза, поражать различные части
Read the text closely, define the main thought of each paragraph. Compose two questions to each paragraph and be ready to answer them.

I. The cardinal symptoms of tuberculosis.
2. The course of TB treatment in the USSR.
3. The prophylaxis of the disease.

V. Read and translate the following text:

CLINICAL FORMS OF PULMONARY TUBERCULOSIS

It is not always possible to classify a case of pulmonary tuberculosis as a particular type of the disease, but a number of general clinical forms may be recognized, depending upon the extent, duration, accompanying symptoms and, particularly, the pathogenesis of the various ways in which reactivation of the primary process takes place has been described. The particular way in which this comes about determines the clinical form of the disease. When rupture into the blood vessel occurs with dissemination of foci throughout the lung, miliary tuberculosis develops. Rapid caseation, necrosis, and cavitation, followed by rupture into a bronchus, produce an acute pulmonary tuberculosis. A slowly advancing caseation of the process, with continued infection, leads to a chronic ulcerative tuberculosis, whereas a gradual transformation of a lobe or entire lung into a fibrous mass brings about a fibrotic tuberculosis.

Miliary tuberculosis develops from a seeding of tubercle bacilli carried from an eroding caseous focus by the blood or the lymph to various parts of the body. In areas supplied with capillaries, the bacilli are filtered out and nodules form. Any organ or serous membrane may be infiltrated.

Acute pulmonary tuberculosis, lobar or lobular in distribution shows symptoms from onset, occurring in an apparently healthy person, or may be either caseous pneumonic or caseous bronchopneumonic in type. The onset and course of the infection resemble those of the pneumonias.

Acute lobar pneumonic tuberculosis is an exudative process with symptoms resembling lobar pneumonia at onset. The disease is progressive in character, with rapid loss of weight, prostration, and early death. Caseation and necrosis occur rapidly but tubercle bacilli rarely appear until after the tenth day. If fibrosis occurs, the patient may recover.

Acute bronchopneumonic tuberculosis is a lobular form of acute tuberculosis occurring chiefly in children and young persons, with sudden onset and symptoms of an acute bronchopneumonia. Chronic productive tuberculosis is of two types, chronic ulcerative tuberculosis and chronic fibrotic tuberculosis.

VI. Speak about the forms of TB.

VII. Pick out medical terms pertaining to tuberculosis and learn them.
UNIT 7

Texts: 1. Acute Leukemia.
2. Preleukemia.
Word-Building Elements: Prefixes pre-, ab-, co-.

Pre-Text Assignments

I. Learn the following words and word combinations:

Leukemia [lju'ki:mia] белокровие, лейкемия

Leukemia is a fatal disease with marked increase in number of blood leukocytes.

Indolent ['indələnt] безболезненный

Leukemia is more indolent than has been thought.

Lupus erythematosus ['lu:ps 'eriθemətəs] сретематозная волчanka

It was just few years ago that we recognized dissiminated lupus erythematosus only in its terminal phase.

Myeloma [meɪlə'məʊmə] опухоль спинного мозга

Myeloma is a tumour composed of cells of type normally found in the bone marrow.

Innocuous ['ɪnəkjuəs] безвредный, безобидный

Acute leukemia seems innocuous at its onset.

Fulminant ['fʌlmaɪnənt] скоротечный

Then the disease becomes fulminant and causes the death of the patient.

Cytopenia [ˌsaitə'piːniə] уменьшение форменных элементов в крови

Cytopenia is the deficiency in the cells of blood.

Megakaryocyte ['meɡə'kærɪəsait] большая многоядерная клетка костного мозга

Frequently megakaryocytes and red blood cell precursors were well preserved.

Ecchymoses [ˈɛktɪˈmɔːsɪs] синяк, кровоподтек

On physical examination the doctor found out some ecchymoses on the patient's body.

II. Form new words adding:

a) the prefix pre- (the prefix pre- means до-, пред-, впереди, заранее):

systolic, leukemia, tibial, costal, spinal, medication, hemiplegia, diastolic, central, clinical, condition;

b) the prefix co- (the prefix co- means общность действия, совместность, сотрудничество):

existence, enzyme, action, exist;

c) the prefix ab- (the prefix ab- has negative meaning не-, a-):

mortal, normal, irritation, normality, junction.

III. Translate the following terms and analyze their structure:

chemotherapy, granulocytic, disfunction, hematologist, marrow-looked, immunoglobulin, lymphatic, disorder.
IV. Match the following English word combinations with the Russian ones:

1. acute leukemia 1. прелейкемическое состояние
2. an asymptomatic patient 2. острая лейкемия
3. to have a long survival 3. пациент без симптомов
4. pre-leukemic state 4. долго выживать
5. routine blood study 5. обычное исследование крови

V. Find substitute for the following word combinations:

1. fatal disease with marked increase in number of 1. myeloma
   blood leukocytes
2. inflammation of the skin 2. cytopenia
3. a tumour composed of cells of the type normally
   found in the bone marrow 3. lupus erythematosus
4. deficiency in the cells of the blood 4. occult
5. obscure or hidden from sight 5. marrow
6. soft material filling most of the cavities and
   cancelli of the bones 6. leukemia

ACUTE LEUKEMIA

Indolent Nature of Acute Leukemia. Most, if not all, acute leukemia is more indolent than has been thought. There is good precedence for this in other hematologic disorders. It was just a few years ago that we recognized disseminated lupus erythematosus only in its terminal phase. Multiple myeloma has been preceded by months and years of disordered immunoglobins and sometimes marrow involvement. The parallel with chronic lymphatic leukemia is a striking one. As in that disorder it is not at all uncommon to find acute leukemia by chance. An asymptomatic patient has routine blood studies done for an insurance examination, in preparation for surgery, or during observation for an unrelated infection and acute leukemia is found. It may be many months before the patient develops symptoms or becomes more seriously ill. Furthermore, we see patients in whom multiple laboratory and X-ray film studies have failed to find the cause of some hematologic disease, only to find the tell tale diagnosis in the marrow — often long after the onset of symptoms. Acute leukemia, however innocuous it may seem at onset, will eventually become fulminant and cause the death of the patient. There is, however, the possibility that the patient will die of some other cause before the leukemia has progressed to the point where it can be diagnosed.

Two factors appear to be involved in the course of acute leukemia: 1) the nature of the beast, and 2) the resistance of the host or his ability to live with his disease the less virulent the leukemia and the greater the adaptation made by the patient, the less the effect of the leukemia. Undoubtedly, it is this balance that has resulted in the accumulation of cases of adults with leukemia who have had long survival. These sentiments were voiced by Dameshek and Gunz when they spoke of leukemia «coexisting simultaneously with the normal tissues». More recently, Greenberg and his colleagues studied leukocytes and their colony-forming capacity and colony-stimulating activity. They found no difference in the
activity of leukocytes in acute leukemia and preleukemia. They commented that either the preleukemia marrow is populated by a potential-leukemic clone that has a greater differentiation in vivo than a frankly leukemic clone or that normal and leukemic clones coexist and the pre-leukemic host is somehow able to cope with the abnormal line for an extended time.

Smoldering Acute Leukemia. Some patients were observed in whom the diagnosis of acute leukemia was either obvious or occult and whose disease smoldered along for months and even years. The patients had a single or multiple cytopenia and usually had symptoms of easy fatigue or spontaneous bruising for a long time. Physical examination except for varying pallor or ecchymoses or both was not remarkable. The marrow varied in cellularity, and the percentage of blast cells varied from 5 to 10%, to almost complete infiltration. Frequently, megakaryocytes and red blood cell precursors were well preserved although often the latter showed dispoiesis. Occasionally, the marrow looked superficially quite normal and the diagnosis could be suspected only with careful study. The average course was well over a year before the change to a more fulminant leukemia developed. With one exception all the patients had acute granulocytic leukemia.

Survival ranged between 10 and 90 months, with a medial survival of 16 months.

Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.

II. Read the item «Indolent Nature of Acute Leukemia» and answer the questions:


III. Discuss the item «Smoldering Acute Leukemia» according to the plan:

1. The symptoms that were noted by the patients.
2. The results of physical examination of the patients.
3. Survival range...

IV. Look through the text again and write a summary.

V. Read and translate the following text:

PRELEUKEMIA

Another condition that has received increasing attention in the literature has been preleukemia. There have been several recent excellent reviews. It has been variously defined, but most authors agree that it represents bone marrow dysfunction that precedes the onset of diagnosable acute leukemia by the «usual criteria». Preleukemia, then, is a term applied to a disorder in retrospect after the diagnosis of acute leukemia has been made. In smoldering acute leukemia, the marrow is diagnostic of acute leukemia when first seen. The distinction between the two in some instances may be based on what the hematologist or clinical
pathologist requires for the morphologic diagnosis. So, preleukemia or smoldering acute leukemia, are merely confirmatory recognition of the early existence of acute leukemia.

Diagnosis and Treatment. The accurate recognition of pre-leukemic states in the near future is an exciting one because it will permit to explore approaches to therapy of these patients — therapy that might be more effective than that available for fully developed acute leukemia.

Our experience with smoldering acute leukemia makes us doubt this. We have not treated our patients with smoldering disease until they show evidence of a fulminant change in their course and thus believe we do not interfere with their disease-to-host relationship nor subject them too soon to chemotherapy and its inherent dangers. The consideration of the patient with acute granulocytic leukemia must include not only the best of the available chemotherapy, but no specific treatment at all. Crosby pointed out the need to modify therapy to fit the individual case and in inactive cases, not to treat. Beard and Fairley discuss similar cases where progression is slow, and comment that such patients should be observed without specific therapy for a month or two to see how quickly the disease is progressing. Speer and his colleagues have recently expressed this sentiment in an abstract entitled «Identification of Smoldering Leukemia by Delaying Chemotherapy» that they summarized in the following. «This approach identifies smoldering leukemia that has an incidence of 10—15%, and the early deaths resulting from intensive chemotherapy of these patients from the onset is reduced».

Acute granulocytic leukemia in its smoldering phase represents a form of this disorder that should not find its way into protocol or gow-therapy. The physician who wishes to refer his patient to a treat center might well determine the philosophy of that institution in this regard before such referral occurs.

Case selection for chemotherapy should be most careful. When there appears to be a favourable balance between the disease and the host, man must be exceedingly careful «not to put asunder».

VI. Divide the text into sense-groups and entitle them.

VII. Speak about diagnosis and treatment of preleukemia.

SECTION IV

Surgery

UNIT 1

Texts: 1. Soviet Surgery,
2. The Kiev Research Institute of Clinical and Experimental Surgery.
Word-Building Elements: Term-element «trauma».

Pre-Text Assignments

I. Learn the following words and word combinations:

Tremendous [triːˈmendəs] большой, огромный
Tremendous advance has been made by our country in the field of medicine.
Heart and lung machine аппарат «сердце-легкие».
Heart and lung machine is used while performing complex heart operations.
Open heart operation операция на открытом сердце
Open heart operations are performed mainly in barocameras.
Cadaver blood трупная кровь
Cadaver blood was transfused for the first time in 1932.
Transplantation [ˌtrænspləˈneɪʃən] пересадка
Transplantation of bones, vessels and organs is successfully performed by Soviet surgeons.
Incompatibility [ˈɪnkwəm,prætəˈbɪlɪtɪ] несовместимость
Incompatibility is the main factor preventing transplantation of organs.

II. Form ten new terms adding different suffixes to the term-element «trauma».
Model: traumatism, traumatology.

III. Analyze the following terms:
transplantation, asepsis, transplantability, contamination, affliction, drainage, antisepsis, incompatibility.

IV. Match the following English word combinations with the Russian ones:
1. kidney transplantation 1. продлить жизнь
2. cadaver blood 2. трупная кровь
3. tremendous advance 3. пересаженный орган
4. donated organ 4. пересадка почек
5. to prolong life 5. огромный прогресс

V. Find substitutes for the following word combinations:
1. pertaining to injury 1. transfusion
2. introduction of blood into the veins 2. hypertension
3. inflammation of the bladder 3. traumatic
4. high blood pressure in the arteries 4. transplant
5. to remove and plant in another place 5. cystitis

VI. Translate the following sentences. Pay attention to the construction «it is (was)... that (who)»:

Pattern: It was I. P. Pavlov who developed the study of the conditioned reflexes.
Именно И. П. Павлов создал учение об условных рефлексах.

1. It was patient Orlov who had undergone blood transfusion. 2. It was in summer that the patient’s condition became much better. 3. It was the great Soviet ophthalmologist V. P. Filatov who developed a method of grafting cornea. 4. It was he who had been operated on twice for the same disease.

SOVIET SURGERY

It should be stressed that Soviet surgery has made tremendous advances. Suffice it to say that the mortality, in case of acute appendicitis
and cholecystitis, is several times lower than that in some of the highly
developed capitalist countries.

Our surgeons have performed over 60,000 operations on the heart
at the hospitals, which are equipped with heart and lung machines. Open
heart operations are performed. We are proud that it was the Soviet
surgeon professor Sergei Brukhonenko who was the first in the world to
work out this method for which he was awarded the Lenin Prize. Man-
kind's cherished dream of transplanting tissues and organs is now be-
coming a reality. In thousands of operations various plastic materials are
being used to replace tissues, parts of organs and blood vessels. These
include heart valves. As early as the thirties Soviet doctors Sergei Yudin,
Vladimir Shamov and others succeeded in transfusing cadaver blood.
This outstanding discovery, which won the Lenin Prize, was the first
step towards using tissues and organs from cadavers. Later transplanta-
tions of bones, joints, skin, blood vessels and other tissues were per-
formed. The world's first kidney transplant was performed in 1934 by
prof. Yuri Voronov.

Of late the doctors have discovered that transplants fail because of
incompatibility between the donated organ or tissue and the patient
receiving it. The human organism reacts against all aggressions.

When the British scientist Sir Peter Medaver discovered the nature
of this reaction ways were found to partially overcome immunity. This
opened up the possibility of organ transplantation in man.

Several hundred successful kidney transplantations have been per-
formed in various parts of the world. In our country such operations are
performed only in extreme cases when the kidneys have ceased to func-
tion and the patient is fatally ill. Then a successful operation can prolong
life. In cases of complete incompatibility another transplant can be done.
Little by little it is becoming possible to transplant other organs.
Transplantation of the liver and pancreas have been performed success-
fully. Heart transplants are now attracting great attention.

Post-Text Assignments

I. skim through the text and define its main idea.
II. Read the text closely in paragraphs and put questions to each paragraph.
III. Read the second paragraph once again and speak about the new surgical operations
performed by Soviet surgeons.
IV. Read the fifth paragraph of the text and translate it.
V. Write all the medical terms out of the text and learn them.
VI. Make up a plan of the text. Discuss the text according to the plan.
VII. Read, translate and retell the following text:

THE KIEV RESEARCH INSTITUTE
OF CLINICAL AND EXPERIMENTAL SURGERY

The Kiev Research Institute of Clinical and Experimental Surgery is Ukraine's main institution for gastro-intestinal tract surgery and the
Republic's Vascular Centre. It was founded in 1973. The Institute pro-
vides differential treatment for each of the seven existing forms of pancreatic diseases, which made it possible to perform over 800 successful pancreas operations. It has completed its experimental research into pancreas transplantation and is now on the threshold of grafting the gland to humans. Until now very few cases of such transplants have been reported in the world.

There have been significant achievements in gastro-intestinal tract surgery. Gastric ulcers are a widespread affliction in many countries. They affect 10 per cent of the population in the USA, 4.5 per cent in Western Europe, and almost 1.5 per cent in the USSR. Although the main treatment is therapeutic in nature, every fifth patient develops complications requiring surgical intervention.

Over 70,000 operations on gastric ulcers are being performed in our country every year. The Institute has introduced new surgical methods on a differential approach to disorders of the gastric secretion phases and has performed about 800 successful operations.

The Institute can also boast of favourable results in operating on the Vater's papilla, a small nipplelike projection of the pancreas, which is regarded as almost inaccessible to surgery. In many countries surgeons have flatly refused to perform such operations.

The Institute has had another first in the development of pancreas cancer operations in Ukraine. Such operations had been practically unknown in our Republic before.

As Ukraine's Vascular Center the Institute conducts research into the surgical treatment of cardio-vascular diseases. In the past, operations on blood vessels were performed by tying the vessel and cutting off the blood stream. Only recently have surgeons started replacing the affected arteries with protheses and making plastic operations. The Institute's specialists proposed a new method based on substituting the patient's own veins for his affected arteries. In the case the veins are not trimmed away, but the valves are sacrificed to allow blood to flow through in the proper direction, which keeps the veins well supplied and prevents clotting. This method has proved so effective that many a potential cripple has been able to return to active life. To date there have been over 75 of these operations.

The Institute, as its name implies, is an experimental establishment. All the new methods of operating that it develops are first tried out on animals. The surgeons are considering the possibility of clinical kidney transplantation. Another important line of research is the development of new surgical materials. The problem of finding proper sutures is world wide, for the materials now in general use don't meet the surgeon's requirements. The Institute joined forces with the Kharkov Pharmaceutical Institute and the Kiev Institute of High Molecular Compounds in developing two new types of dissolvable sutures. Moreover, the scientists have developed antibacterial coatings for cardiac valves and antibacterial protheses to replace blood vessels. These materials are now widely used at the Institute.

VIII. Speak about:

1. Types of operations performed by Soviet surgeons.
2. The function of the heart and lung machine.
3. Research into the surgical treatment of cardio-vascular diseases.

UNIT 2

Texts: 1. Surgical Diagnosis.
2. Taking a Case History.
Word-Building Elements: Term-element «polio».
Grammar: Modal Verbs with Passive Infinitive.

Pre-Text Assignments

1. Learn the following words and word combinations:
   Assessment [ə'sesmənt] оценка
   The assessment of the probable result also depends on a correct diagnosis.
   Malformation ['mælfər'meɪʃn] неправильное образование, порок развития
   When asking the patient, the physician must inform himself about the presence of malformations in the patient’s family.
   Poliomyelitis [,pɒlɪ,meɪ'laɪtɪs] полиомиелит
   Poliomyelitis is an inflammation of gray substance of spinal cord.
   Venereal disease [vɪ'neərəl] венерическое заболевание
   Venereal diseases are difficult to be treated.
   Urogenital [,juərədʒə'nɪtl] мочеполовой
   Questions about the special symptoms should deal with the individual systems (respiratory, digestive, urogenital, locomotor, etc.).

II. Form new words adding the term-element polio-. Memorize the meaning of the term-element «polio» - серое вещество:
   encephalitis, myelitis, encephalomyelitis, myelopathy, myeliticidal, encephalopathy, clastic.

III. Analyze the structure of the following words:
   locomotor, hereditary, surgical, malformation, illness, poliomyelitis, investigation, examination.

IV. Match the following English word combinations with the Russian ones:
1. duration of the symptoms
2. abnormal thirst
3. to establish the clinical symptoms
4. to take into consideration
5. loss of appetite
   1. чрезмерная жажда
   2. длительность симптомов
   3. принимать во внимание
   4. установить клинические симптомы
   5. потеря аппетита

V. Find substitutes for the following word combinations:
1. without perception
2. defective formation
   1. urogenital
   2. anamnesis
3. pertaining to the urinary and genital organs
4. the past history of the patient
5. pertaining to respiration
6. pertaining to the mind
3. mental
4. respiratory
5. malformation
6. unconscious

VI. Translate the following sentences. Pay attention to the meanings of the modal verbs with Passive Infinitive:

Pattern: Every examination must be preceded by the fullest possible investigation of the patient’s history.

1. The patient cannot be discharged from the hospital because he hasn’t completely recovered. 2. From the patient’s statement information must be obtained as to past illnesses. 3. With the rise in blood pressure, life span may be reduced. 4. An effort must always be made to obtain objective confirmation of the patient’s statements during the subsequent examination. 5. The progress of the patient’s symptoms must be obtained in proper chronological order and with detailed descriptions of the variations in severity, a list of the various remedies employed and the statements of any attending physician, particularly in regard to his physical findings. 6. The course of the disease can often be mapped from such a careful story.

SURGICAL DIAGNOSIS

When a patient visits the consulting room of a doctor, he does so in the hope of being cured of his disease, or at least relieved from his suffering. For the patient the desire for treatment comes first. If the patient is to be successfully treated, however, the disease must first be recognized. For the physician, therefore, diagnosis comes first. It is only on this foundation that treatment (therapy) and prevention (prophylaxis) can be built, and the assessment of the probable result (prognosis) also depends on it.

The aim must always be to discover the cause (aetiology) of the disease, so that causal treatment can be instituted, but one often has to be content with establishing the clinical symptoms and morphological changes.

Investigation of the History (anamnesis). Every examination must be preceded by the fullest possible investigation of the patient’s history. In very urgent surgical emergencies, this will have to be limited to ascertaining the most important facts, and if the patient is unconscious and no relations are available it will at first be necessary to do without even this, in which case a full history must be obtained afterwards, in order to get a clear picture.

When enquiring into the history, the physician must inform himself about the health of other members of the family (family history), paying particular attention to the incidence of tuberculosis, mental disease, malformations, metabolic diseases, and syphilis.

From the patient’s statements, information should be obtained as to past illnesses (children’s diseases, poliomyelitis, rickets, wounds,
accidents, operations, internal diseases), his occupation (there may be reason to recommend a change of work), his habits (alcohol, smoking) and any venereal disease.

This investigation of the past history serves mainly as an orientation. Questions about the present symptoms, which are the immediate reason for the patient's visit must draw out the relevant information point by point, so that by the end a general picture of the possible disease is beginning to appear. It is also necessary that the physician should be acquainted with all the diseases that are at all likely to be present, and should take them into consideration.

In many ways the patient's statements will be strongly subjective, and a good interviewing technique is required to bring a discursive patient back to the point without letting him know it, and to induce a reluctant and reserved patient to give the necessary information without feeling he is giving himself away. The investigation must be carried out quite objectively, and the questions must be as simple as possible. Statements about the duration of the symptoms or the dates of past events must be taken with the greatest caution.

An effort must always be made to obtain objective confirmation of the patient's statements during the subsequent examination. In the case of functional disturbances, when little objective change can be detected the diagnosis depends entirely on interrogation and the subjective symptoms revealed by it.

The history, consisting of the hereditary and family history, the personal history and the present complaint must be entered accurately on a case-sheet for the information of the physician and other investigators, the patient's own statements, even perhaps in his characteristic phraseology, being set down, and not the information gleaned from them, which can be added in brackets as a personal opinion.

In most hospitals there is a form which includes, among other things, the special points about which questions must be asked, which depend on the speciality dealt with.

General symptoms, such as pronounced gain or loss of weight, continuously high temperature, pain, loss of appetite, disturbances of sleep, abnormal thirst, and digestive disturbances should be dealt with first, going on to the special symptoms afterwards. Questions about the special symptoms should deal with the individual systems (respiratory, digestive, urogenital, peripheral and central nervous systems, locomotor system, etc.). Examination begins after taking the history.

Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.
II. Find in the text the sentences containing the English equivalents of the following Russian word combinations:

предупреждение заболевания, установить причину заболевания, выявить клинические симптомы, получить объективное подтверждение, избавиться от страданий, наследственность.
III. Read the text closely in paragraphs. Define the main idea of each paragraph and answer the questions:


IV. Read the item «Investigation of the History» and speak about general and special symptoms of the disease.

V. Make up a dialogue between a doctor and a patient suffering from appendicitis attack (investigation of the patient’s history).

VI. Translate the following paragraph. Underline the modal verbs:

The progress of the patient’s symptoms must be obtained in proper chronological order and with detailed descriptions of the variations in severity, a list of various remedies employed and the statements of any attending physician, particularly in regard to his physical findings. The course of the disease can often be mapped from such a careful story, and is frequently of great aid in prescribing further therapy especially if the diagnosis remains doubtful.

VII. Speak on the following items:

1. Discovering the cause of the disease by a doctor.
2. Investigation of the patient’s history.
3. Taking a family history.
4. General and special symptoms.

VIII. Read and translate the following text:

TAKING A CASE HISTORY

Case histories are biographical accounts of a patient by his doctor containing all information about his past and present that helps the physician understand the patient’s health problems. A patient is asked to give such an account upon his first visit to a doctor or admission to a hospital. If he comes with a specific complaint he will, of course, be asked to tell his symptoms, any treatment or medicine he is taking and how long he had had the complaint. If he comes for a check up, the interview may begin with a series of more general questions about the patient’s home, work and marital status. The interviewer also will want to know something about the patient’s personal habits whether he drinks or smokes, and if so, how much. He will want information about the patient’s parents — whether they are living or, if not, at what ages they died and of what causes. It is important for a doctor to know about any disease that tends to run in a patient’s family and whether there is a family tendency to be tubercular or allergic, or suffer mental or emotional disturbances.
The patient's own medical history is investigated. The doctor will want to know whether he had had all of the childhood diseases, any other diseases or disorders and any injuries or operations.

Well written, complete and evenly-balanced case histories are a prime necessity. Completeness and particularly accuracy are of vital importance. Poor histories usually fall into one of the two classes: profusely written, but with important facts omitted, or only sketchily outlined or descriptively good, but entirely brief, with neglect of much that is positively essential. All results of physical examination should be set down completely and in detail.

IX. Divide the text into sense-groups. Entitle each of them.

X. You are examining a patient. What questions would you ask him to know his case history?

UNIT 3

Texts: 1. Types of Wounds.
2. Late Complication of Scalding in Children.
Word-Building Elements: Prefix super-.
Grammar: Adverbial Clauses of Time.

Pre-Text Assignments

1. Learn the following words:

To gape [ˈɡeɪp] звать
The edges of the wound gape to a greater or lesser extent.

Blunt [ˈblʌnt] тупой
Blunt or smoothish force sometimes acts on the soft parts of the human body producing contused wounds.

Lacerated [ˈlæsət] lacerated
The edges of the wound were lacerated and it was necessary to close it immediately.

Suggillated [ˌsʌdʒɪleɪtɪd] кровоподтекенный
This wound was with suggillated edges.

Slash [slæʃ] резаный
A slash wound is not essentially different from the cut.

Jagged [ˈdʒæɡd] зубчатый, нервоно оторванный
The rougher and more jagged the surface of the missile, the more frightful is the damage caused in the depths and at the exit wound.

II. Form new words adding the prefix super-. Memorize the meaning of the prefix super- над, сверх:

induce, infection, lactation, lethal, motility, nutrition, secretion.

III. Analyze the structure of the following terms:

ruptured, excoriation, tearing, bleeding, surgical, healing, infection, management.

IV. Match the following English word combinations with the Russian ones:

1. the edges of the wound  1. тяжесть повреждения
2. severity of the injury  2. гнойные инфекции
3. putrid infections 3. края раны
4. types of wounds 4. рваная рана
5. tearing wound 5. разновидности ран

V. Find substitutes for the following word combinations:
1. the bursting apart of a muscle or other bodily part 1. excoriation
2. injury to tissues without breakage of the skin 2. contusion
3. removal of an area of skin 3. rupture
4. a spot rubbed bare of skin 4. pyogenic
5. producing suppuration 5. abrasion

VI. Translate the following sentences. Define the type of the Subordinate Clauses:

Pattern: When the patient was re-admitted to the hospital she complained of her angina-like pains (Adverbial Clause of Time).

1. When the patient was wheeled on the buggy from the operating room to his ward two students stayed with him.
2. When the edges of the operating wound were washed the surgeon administered the solution of antibiotics into the wound and introduced a fresh gauze drain.
3. After the students visited the traumatological department they went to the other department where the patients who had undergone abdominal operations were lying.
4. As soon as his condition became better the doctor advised him to start his morning exercises.

TYPES OF WOUNDS

A wound can be a mere superficial skin abrasion (excoriation) or, when further tissue layers are damaged as well it can also have considerable depth (deep wound) and reach, and open, body cavities (penetrating wound).

On the type of force (e.g., cut with a sharp knife, stab with a dagger, hammer blow, entrance and exit of a bullet, crushing and tearing), its direction and the course of the grain of the skin, depends on the form of the wound-edges (split, defect, flap). The edges of the wound gape to a greater or lesser extent, according to the elasticity of the separated tissue, so that the edges of divided blood vessels, muscles, tendons and nerves are drawn far apart. Wounds in tissues without elastic elements (e.g., liver, kidneys, brain) scarcely gape at all. The condition of the edges of the wound is of very great importance in healing. We distinguish, according to their manner of production: contused wounds, ruptured wounds, tears, cuts, slashes, stabs and gunshot wounds.

Contused Wounds. Contused wounds occur when a blunt, smoothish force, e.g. a car wheel, a blow from a stick, stone or hoof, acts on the soft parts, with bones a short distance underneath, so that the soft parts are held between the force and the bones in a sort of press. The edges of the wound are lacerated, frequently undermined, suggillated and defectively nourished. All round, there is extensive excoriation of the skin. In the depths of the wound, muscles, tendons, fascial, blood vessels and nerves, and frequently bones as well, are crushed in the same way and lacerated or smashed. There is little bleeding from such wounds. The
slightness of the pain is also in striking contrast to the severity of the injury, a phenomenon due to local shock.

**Burst Wounds.** In bursts, the force works from inside, outwards, e.g. a piece of broken bone piercing it way out, or a bullet coming out.

**Tears.** Tearing wounds occur when the covering skin, mucous membranes or organic serosa is pulled or stretched beyond the limits of its elasticity. The edges of the wound are irregular and lacerated.

**Cuts.** These are caused by the more or less perpendicular action of sharp objects. The smooth wound edges thus produced gape according to the degree of elasticity of the tissue or the direction of the grain of the skin. It is consideration of these factors that governs whether one gets small soft scars or wide, ugly scars after operation. Bleeding from these «smooth» cuts is considerable; the everyday razor cut is a very good example. Any damage to deeper structures such as arteries and veins, nerves, tendons and joint capsules must be carefully excluded. The operative wound corresponds to the cut and shares with it its minimal tissue damage, severe bleeding and good healing tendencies.

An oblique force produces flap wounds, in which the skin and subcutaneous tissue remain attached only by a bridge of varying width.

**Slash Wounds.** In these a cutting force (e.g. an axe blow) strikes the tissue with great power vertically or diagonally. Apart from possible crushing of the wound-edges the slash wound is not essentially different from the cut.

**Stab Wounds.** Here, a pointed object penetrates into the tissue over a narrow surface. This far it resembles a cut. The danger of stab wound lies in the concomitant injury to large blood vessels and nerves, and in the opening of the cranial, thoracic or abdominal cavities or the joints. The cross-section of the wound edges corresponds to that of the instrument. The wound edges are generally stuck together and do not gape. A special type of stab wound is the impaling injury, in which a stake-like, blunt object, such as a stick or umbrella point, pointed wood or metal pole, penetrates into the body.

**Gunshot Wounds.** Gunshot wounds have very little in common with the wounds so far described. In spite of the frequency only calibre-sized skin defect at the entrance, the bullet is very destructive of tissue, particularly when it meets bones. As in stab wounds, the clinical course depends on the extent to which blood vessels, nerves, muscles, bones, joints and viscera are involved. The rougher and more jagged the surface of the missile, the more frightful is the damage caused in the depths and at the exit wound.

**Bites.** In wounds caused by the bite of man or animal, exceptionally virulent pathogenic organisms (human or animal passage) can be transmitted, and can produce in a very short time correspondingly dangerous pyogenic and putrid infections. In spite of their usual small extent, bites should not be lightly dismissed. Large bites, needing surgical management, are treated and left wide open.
Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.
II. Read the first paragraph of the text, find attributes and define the parts of speech they are expressed by.
III. Read the paragraph under the title «Contused Wounds» and answer the following questions:
   1. When do contused wounds occur? 2. What are the edges in contused wounds? 3. Is there extensive excoriation of the skin? 4. May we observe little bleeding from such wounds?
IV. Read the paragraph under the title «Cuts». Make up 7 questions covering its contents.
V. Read the paragraph under the title «Stab Wounds» and discuss the information obtained.
VI. Speak about the types of wounds.
VII. Write a summary of the text.
VIII. Translate into English:

I. Раны бывают резаные, ушибленные, рваные, колотые, огнестрельные. 2. Раны подлежат обычно оперативному лечению — первичной хирургической обработке. Последняя производится хирургом и может заключаться в рассечении раны с частичным иссечением нежизнеспособных тканей, с остановкой кровотечения и удалением инородных тел. 3. Наиболее целесообразная первичная обработка раны в течение первых часов после ранения, когда признаки инфекции в ране еще мало выражены. 4. Небольшие раны смазывают настойкой йода. 5. Раны, загрязненные землей, осторожно очищают, снимая грязь пинцетом или марлей.

IX. Read the text:

LATE COMPLICATIONS OF SCALDING IN CHILDREN
TREATMENT AND PREVENTION

Thirty-one children were treated for late complications of the hot teapot syndrome, scalding which occurred when the victims pulled down vessels containing hot fluids from just within their reach, spilling the contents on themselves. Ages ranged from nine months to seven years. All but three were less than four years of age. Nineteen children were boys.

Treatment was undertaken from four months to 15 years after scalding injury had occurred. The more frequent sites of injury were the upper arm in 27 instances, the forearm in 17 children, the neck in 16, the chest in 12, the shoulder in ten and the back in four.

Indications for operation in these children included 20 scar contractions and 15 hypertrophic scars. The more common sites of contractures were the anterior axillary fold and elbow, each being affected nine times. Operations consisted of incision, discission, cross cutting with Z plasties, and excision of scars, with skin grafting and Z plasties as
required. One dermabrasion was performed. Local pedicle flap rotations were used in three instances.

Factors which result in the complications of scalding in children which predisposes to full thickness skin injury and the unequal growth of scar and normal tissues, which results in scar contractures during periods of rapid growth, in flexion areas particularly liable to development of contractures, namely, the axilla and the elbow.

First-aid treatment by rapid cooling of the scalded skin and appropriate grafting during the early weeks after injury are measures which might prevent late complications. Scar contractures from scalds in young children tend to recur during growth periods even after reparative operations. Consequently, close observation is urged until such children are fully grown.

X. Give brief information about complications of scalding in children.

UNIT 4

<table>
<thead>
<tr>
<th>Texts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shock.</td>
</tr>
<tr>
<td>2. Description of Shock.</td>
</tr>
</tbody>
</table>

Pre-Text Assignments

I. Learn the following words:

**Syndrome** ['sindroum] комплекс симптомов, синдром
The clinical syndrome termed shock is a complex situation often associated with severe injuries.

**Incompatible** [,inkəm'pætəbl] несовместимый, противоположный по действию
In the condition of shock blood pressure falls, often to levels incompatible with recovery.

**Perpiration** [,pə:spa'reʃən] потение
Cold perspiration can be observed in shock.

**Drowsiness** ['drauzinis] сонливость
Rapid, weak pulse, cyanosis and drowsiness characterize the observable features of shock.

**Oozing** ['u:zıŋ] просачивание, медленное течение
Extensive burns or traumatized areas with oozing and resultant loss of fluid may cause a more severe type of shock.

**Exhaustion** [ɪɡˈzɔːʃən] истощение
In shock the patient is in a state of exhaustion and is pale and cyanotic.

**Feeble** ['fi:bl] слабый
The patient's pulse is feeble, regular, and rapid.

II. Form new words adding the term-element <vaso>- . Memorize the meaning of the term-element <vaso>- сосуд:

constriction, motion, depressor, dilatation, thrombin, stimulant, hypotonic, hypertonic, neurosis, paresis, puncture.
III. Analyze the structure of the following terms:
circulating, clinical, bleeding, unconsciousness, traumatized, treatment, prevention, vasospastic, vasorelaxation.

IV. Match the following English word combinations with the Russian ones:
1. severe injuries 1. слабый пульс
2. to produce a condition of shock 2. предупреждение и лечение
3. pale and cyanotic 3. сильные ушибы
4. prevention and treatment 4. продуцировать состояние шока
5. weak pulse 5. синюшный и бледный

V. Find substitutes for the following word combinations:
1. mutually repellent, as medicines; not to be conjoined 1. vasoconstrictive
2. low blood pressure 2. exhaustion
3. absence of vital power 3. vasoconstriction
4. diminishing of the caliber of vessels, leading to decreased blood supply 4. incompatible
5. causing constriction of blood vessels 5. hypotension

VI. Translate the following sentences. Find the Participles and define their functions in the sentences:

1. The clinical syndrome termed shock is a complex situation often associated with severe injuries. 2. These are toxins produced from normal constituents of cells in the presence of trauma. 3. Clinical conditions causing a more severe type of shock are crush injuries of the body and extremities, extensive burns or traumatized areas. 4. Substances used in the prevention and treatment of shock are whole blood, plasma, serum and others.

SHOCK

The clinical syndrome termed shock is a complex situation often associated with severe injuries. Experimentally, it was found that moderate degrees of crushing of the leg of an anesthetized rabbit, which obviously feels no pain and which loses no blood, still produces a condition of shock. In this condition, blood pressure falls, often to levels incompatible with recovery. The hypotension in this experimental state is caused by circulating materials from the injured part. These are toxins produced from normal constituents of cells in the presence of trauma. Simple loss of blood from several veins or arteries, including spontaneous internal bleeding from any cause, may lower the blood pressure sufficiently to produce shock. Rapid, weak pulse, cold perspiration, cyanosis, and drowsiness or unconsciousness characterize the observable features of shock.

Clinical conditions causing a more severe type of shock are crush injuries of the body and extremities, extensive burns or traumatized areas with oozing and resultant loss of fluid, internal or external bleeding, diarrhea, infectious diseases, cardiac emergencies, poisons, etc.
The patient is in a state of exhaustion and is pale and cyanotic. His pulse is feeble, regular, and rapid, and there is a progressive fall in blood pressure.

Substances used in the prevention and treatment of shock are whole blood, plasma, serum, and plasma expanders or substitutes, or the temporary expedients, isotonic sodium chloride solution or 5 per cent dextrose solution. Levartenol (Levophed), metaraminol (Aramine), mephenetermine (Wyamine), phenylephrine (Neo-Synephrine), or other sympathomimetic pressor amines are useful in producing peripheral vasoconstriction and thus in raising the fallen blood pressure. The use of these agents in shock is controversial. Some authorities consider their use valuable in appropriate cases.

**Post-Text Assignments**

I. Skim through the text and find the sentences expressing its main idea.

II. Pick out the words from the text describing the condition of shock.

III. Read the text in paragraphs. Define the main subject of each paragraph.

IV. Read the text closely and answer the following questions:


V. Write a summary of the text.

VI. Read and translate the following text. Describe the patient in shock.

The following is the description of shock made by the famous surgeon N. Pirogov: «You see a wounded soldier without an arm or leg lying stock-still at the dressing station; he does not cry or moan or complain, but is indifferent to everything and does not ask for anything; his eyes are immovable and he gazes into the distance, his body being cold and his face pale as those of a corpse. His pulse is like a thread, barely noticeable. His wound and skin are almost completely insensitive, the patient displaying a sign of sensation only by contraction of the facial muscles. Sometimes this state passes off within a few hours, and sometimes it persists unchanged until death».

VII. Read, translate and retell the following Case Report:

This 32 year old man was admitted to the hospital in a state of shock after an automobile accident. He had sustained multiple fractures of the ribs on the left side, a ruptured spleen and a bursting injury of the left hepatic lobe that extended to the right lobe superiorly, with a laceration of the vena cava and left hepatic veins. Through a thoracoabdominal incision, splenectomy and left hepatic lobectomy were performed. To control bleeding, the vena cava was clamped above and below the liver for about one hour, and the inflow vessels to the liver were occluded for 35 minutes. Hypothermia was not used. An operative cholangiogram,
through a T tube in the common duct, revealed extravasation of the radiopaque material in the superior segment of the right lobe. A partial resection of this segment anteriorly was attempted. A closed thoracotomy and tracheostomy also were performed on the left side. He received 15 units of blood during the procedure, and his vital signs in the immediate postoperative period were satisfactory. However, he became progressively oliguric and dialysis was required. Little bile was released through the T tube. He died on the tenth postoperative day of pseudomonas septicemia and acute renal failure.

UNIT 5

2. Operation on the Dry Heart.
Word-Building Elements: Term-element «rheuma».

Pre-Text Assignments

I. Learn the following words and word combinations;

Rheumatic [ru'mætɪk] ревматический
Rheumatic pericarditis is one of the most dangerous heart impairments.

Novelty [ˈnɒvəlti] новшество
Technical novelties like laser beams are used in modern medicine.

Fibrillation [ˈfaɪbrɪleɪʃn] трепетание
Ventricular fibrillation results in sudden death in 90% of cases.

Atherosclerosis [ˌæθəsərəʊˌskɪəˈrɔsɪs] атеросклероз
Treatment of atherosclerosis is subject to extensive research of scientists.

Elucidation [ɪˈljuːsəˈdeɪʃn] разъяснение
Further elucidation of the process causing ventricular fibrillation will arm the scientists with new effective methods of treating heart diseases.

II. Read and translate the following terms. Memorize the meaning of the term-element «rheuma» - ревма-:

rheumatism, rheumatoid, rheumatisant, rheumacarditis, rheumatosis, rheumatic, rheumatology.

III. Match the following English word combinations with the Russian ones:

1. a death sentence 1. полностью излеченный
2. completely cured 2. специализированные кабинеты
3. specialized examination rooms 3. смертный приговор
4. heart failure 4. техническое новшество
5. technical novelty 5. порок сердца
BACK TO WORK AFTER INFARCTION

We are proud of Soviet progress in controlling cardio-vascular diseases. Some thirty years ago a myocardial infarction was virtually a death sentence. Today the Soviet system of combined therapy has changed all this radically — nine such patients out of ten are completely cured and go back to their ordinary jobs.

Progress on the rheumatic diseases, often the basic cause of heart trouble, is also considerable. A rheumatic control service has been set up in our country in the past 15—20 years. It covers dozens of specialized cardiorheumatology clinics and centres plus more than 3,000 specialized examination rooms — no other country has such a thorough state service.

Results were almost immediate. Rheumatic disease was cut by 50 to 65 per cent, and mortality greatly reduced. Early diagnosis of primary rheumatic carditis (in the first two weeks) prevents permanent heart damage in most patients. Some 15 to 20 years ago, 50 to 60 per cent of patients suffered permanent damage, while today the figure is 15 per cent for affected children and 7—8 per cent for adults.

Soviet doctors are now doing research on identifying the symptoms that point to the possibility of a cardiology patient's sudden death. Technical novelties like micro-monitors are used: the patient carries a miniature monitor in his breast pocket, which records the functioning of his heart round the clock, so that the earliest irregularities in the heart rhythm are recorded. Such studies will probably clarify the origin of ventricular fibrillation — the serious heart rhythm disturbance that results in sudden death in 90 per cent of cases.

The relationship between atherosclerosis and disturbances in the immune system is also subject to a lot of research. A detailed study is being made of different classes of fatty proteins of which some produce atherosclerotic changes in the blood vessel walls. The relationship between immunity disturbances and the appearance of such fatty proteins is being confirmed. Further elucidation of these processes and research into the properties and structure of the protein that is a component of the harmful fatty complexes will show how and why they reach the blood vessel walls, and it is quite possible that influencing the immunity system may soon emerge as a treatment and prevention of atherosclerosis.

Post-Text Assignments

I. Skim through the text and define its main idea. Write the key sentences out of the text.

II. Read the text in paragraphs. Define the main subject of each paragraph.

III. Read the text closely and answer the following questions:

1. What disease was virtually a death sentence some thirty years ago? 2. When was the rheumatic control service set up in our country? 3. What medical establishments does the rheumatic control system include? 4. What prevents permanent heart damage in most patients? 5. What helped to reduce mortality from rheumatic carditis? 6. What
technical novelties are used for early detection of heart rythm irregularities? 7. What will help to clarify the origin of ventricular fibrillation? 8. What changes do fatty proteins produce in the blood vessel walls? 9. What will further elucidation of the processes causing immunity disturbances confirm?

IV. Speak about technical novelties used on identifying the symptoms in a patient suffering from heart damage.

V. Read and translate the following text without using a dictionary:

OPERATION ON THE DRY HEART

The blood stream could well be called the river of life, and the heart is the motive force and control. A stream of blood is pumped into the aorta each time the left ventricle contracts. The main stream then divides first among the arteries, then through the capillary arteries to take oxygen round the body. The blood leaves the oxygen behind, picks up the carbon dioxide and other waste, and goes back through the capillary and main veins into the heart via the right auricle to the right ventricle which, contracting, pumps it to the lungs where it leaves behind the carbon dioxide and picks up more oxygen, and moves on down a special vein through the left auricle, to be pumped on again by the left ventricle in the next cycle.

That is how the blood circulates in a normal healthy person.

Unfortunately, a tiny percentage of people are born with congenital defects of the heart, but if you multiply even a tiny fraction of a percent by the number born in a year, you’ll find the number is not small at all. And six out of ten babies born with heart defects cannot survive without corrective surgery. Now it is extremely difficult to operate on babies because their hearts and blood vessels are so tiny. And some operations are only possible on a dry heart (i.e., an empty heart that has been put out of commission) with the help of an external pump, a heart-lung machine. But this, too, has its problems, especially for children, because oxygen exchange is poor. That is the background.

Hyperbaric oxygenation is used in heart surgery in the Soviet Union. The first pressure chamber operation was done in December 1970 on a «blue baby», a Fallot’s tetralogy case (a complicated multiple heart defect where, the septum between the left and right ventricle leaving a gap, the right ventricle has become stretched and the pulmonary artery narrowed, plus a dextroposition of the aorta, the latter arising from the right ventricle with the pulmonary artery to the left), in which the fresh oxygenated blood and blood returning with waste products get mixed, so that too little oxygen reaches the body.

Hyperbaric oxygenation is now being introduced into everyday practice all over the Soviet Union — there are pressure chambers in quite a few Soviet cities and hyperbaric oxygenation departments have sprung up. The biggest is at Moscow’s Research Institute of Clinical and Experimental Surgery.

VI. Discuss the reading material using the following plan:

1. The blood circulation in a normal heart.
2. Congenital defects of the heart in some people.
3. The use of hyperbaric oxygenation in heart surgery.
4. The first pressure chamber operation in the USSR.

VII. Write a summary of the reading material using the active vocabulary of the unit.

UNIT 6

Texts: 1. Sources of Contamination in Open Heart Surgery.
2. Surgical Wound Care.
Word-Building Elements: Prefix epi-
Grammar: Participles (Recapitulation).

Pre-Text Assignments

1. Learn the following words and word combinations:

Prosthesis [prosθisis] протез, искусственный орган
Prosthesis is the replacement of an absent part by an artificial one.
Preventive measures профилактические меры
Preventive measures should be taken during heart operations
Endocarditis [oendoka:'dainis] воспаление внутренней оболочки сердца

In endocarditis we observe exudative and proliferative inflammatory alteration of the inner lining of the heart, usually involving the valvular endocardium.

Virulence ['viruləns] ядовитость, вирулентность
Ability of an organism to produce infection in its host is called virulence.

11. Form new terms adding the prefix epi-. Memorize the meaning of the prefix епi- над чем-либо, на чем-либо:

gastrium, blast, bulbar, cardiectomy, cranium, cystotomy, dermal, dermatoplasty, dermic.

111. Analyze the structures of the following terms:

contamination, preoperative, myocardium, postoperative, intravascular, endocarditis, microorganism, calcification.

IV. Match the following English word combinations with the Russian ones:

1. sterile cultures 1. длительность хирургической процедуры
2. duration of the surgical procedure 2. стерильные культуры
3. open heart surgery 3. культура крови после операции
4. to undergo surgical intervention 4. операции на открытом сердце
5. postoperative blood culture 5. подвергнуться хирургическому вмешательству

V. Find substitutes for the following word combinations:

1. extreme poisoning 1. diphtheroid
2. deposits of calcium salts in the tissues 2. prosthesis
3 resembling diphtheria
4 any vegetable organism of the class to which mushrooms and molds belong
5 an artificial structure used to replace natural organ

3. fungus
4. virulence
5. calcification

VI. Read and translate the following sentences. Find Participles I and II and define their functions in the sentences:

1. A prospective study was undertaken to identify potential sources of infection in patients requiring open heart surgery. 2. Cultures done during surgery were positive in 47 of 66 patients studied. 3. It turned out that all strong effective drugs were kept in the drug cabinet marked with the letter B and poisonous drugs were kept in the drug cabinet having the letter A. 4. The surgical nurse was getting sterile gowns and dressings ready, sterilizing the necessary set of surgical instruments, preserving blood, preparing the apparatuses for blood transfusion, checking up the presence and state of blood substituting solutions. 5. The perforated ulcer was found on the posterior side in the anterior portion of the stomach.

SOURCES OF CONTAMINATION
IN OPEN HEART SURGERY

Sources of Infection in Patients. A prospective study was undertaken to identify potential sources of infection in patients requiring open heart surgery. Preoperative blood and urine cultures were sterile. Cultures done during surgery were positive in 47 (74%) of 66 patients studied. The most common site of microbial contamination was the repaired area of the myocardium and the prosthesis just prior to wound closure; diphtheroids and Staphylococcus epidermis were the most frequent operative isolants. Postoperative blood cultures were sterile; however, 41% of urinary catheter tips and 50% of intravascular catheter tips yielded a variety of Gram-positive and Gram-negative organisms and fungi. Endocarditis was not encountered despite the high incidence of perioperative contamination by organisms that commonly cause postoperative infective endocarditis.

The overall incidence of infective endocarditis has declined during the past decade. However, a new problem has appeared, endocarditis following open heart surgery. The causative agents are often organisms of low virulence that are part of the patient's normal flora and include Staphylococcus epidermis, Staphylococcus aureus, members of the Enterobacteriaceae, Pseudomonas, fungi, and diphtheroids. Consequently, difficulties may arise in diagnosis and treatment including 1) the delay in diagnosis resulting from the recovery of organisms that are considered contaminants, 2) the resistance of some of these organisms to be less toxic antibiotics, and 3) the eradication of infection on a diseased valve or on a prosthesis (foreign body).

To determine when infection is introduced was deemed important because organisms might gain entrance to the operative site during
surgery or during the postoperative period. This information could be used to develop preventive measures. A study was undertaken to define 1) the frequency of contamination of the operative site in open heart surgery, including exposed myocardium, sutures, prostheses, grafts, and repaired valves; 2) the role of transport vehicles in contamination of the operative site, valve, patch, graft or blood in the bypass unit; 3) the identity on contaminating microorganisms; and 4) the relationship of organisms isolated from the operative site or introduced in the postoperative period to subsequent endocarditis.

Methods and Materials. Sixty-six patients undergoing cardiac surgery that required cardio-pulmonary bypass were studied prospectively at the University of Mariland Hospital. The division of Thoracic Surgery routinely employs the following program of antibiotic prophylaxis beginning 24 hours before surgery and continuing for seven to ten days; cephalothin sodium, 1 gm intramuscularly every six hours, and Kanamycin sulfate, 0.5 gm intramuscularly every 12 hours for most adults. At the discretion of their physicians, some adult patients received smaller doses. Children received antibiotic dosages based on body weight. All prostheses (valve or patch) were immersed in a 10% neomycin solution at the beginning of surgery and removed just prior to insertion. The surgeons rinsed their gloved hands in a 10% neomycin solution before handling the prostheses.

Blood cultures were obtained the day before surgery in 66 patients; all cultures were sterile. Urine of 57 patients was cultured the day before surgery; all the cultures were sterile except one specimen that grew four organisms and was considered to be contaminated.

Positive cultures were obtained from at least one site during the operative procedure in 47 (71%) of 66 patients. 39 patients had positive cultures from a single site; four had positive cultures from two sites; and five had positive cultures from three or more separate sites. The most common sites of positive intraoperative cultures were the repaired area of the heart and the valve prosthesis just prior to closure of the operative wound.

A variety of microorganisms was discovered, the most common being diphtheroids, both aerobic and anaerobic, and staphylococci.

Postoperative Complications. Seven deaths occurred during surgery or within the first 24-hour postoperative period. Only two patients experienced major postoperative infections. One patient underwent resection of a ventricular aneurism and a double coronary artery graft bypass. All studied cultures were sterile. A total of 58 patients were observed for four to six months postoperatively. Infective endocarditis did not occur during this period of observation.

Comment. The incidence of endocarditis after cardiac surgery ranges between 1% and 10%. Risk factors include 1) cardiopulmonary bypass, 2) suture material, prostheses, or other foreign materials, 3) the duration of the surgical procedure, and 4) the presence of calcification in the heart valve. Attempts were made to determine the frequency and nature of surgical contamination, as well as the frequency with which this contamination leads to postoperative endocarditis.
Because postoperative endocarditis did not occur during our study, the role of organisms contaminating the surgical site or introduced during the postoperative period in the production of operative endocarditis could not be established. Nevertheless, the species of organisms recovered were those that commonly cause postoperative endocarditis. Methods are needed to eliminate these potential sources of infection.

Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.

II. Read the text in paragraphs. Define the main idea of each paragraph.

III. Read the text under the title «Sources of Infection in Patients» and answer the following questions.

1. What was a prospective study undertaken for? 2. What were the cultures done during surgery? 3. What was the most common site of microbial contamination? 4. What were postoperative blood cultures? 5. Has the overall incidence of endocarditis declined during the past decade? 6. Has a new problem concerning endocarditis appeared? 7. May difficulties in diagnosis and treatment arise? 8. Why was it important to determine when infection was introduced? 9. What was the study undertaken to define?

IV. Read the text under the title «Postoperative Complications» and speak about the complications occurred after the operation.

V. Read the text under the title «Comment» and speak about risk factors after cardiac surgery.

VI. Speak on the following items:

1. Achievements of Soviet surgery in heart operations.
2. Mankind’s dream of transplanting tissues and organs.
3. Some problems of transplantation.
4. Heart transplants.

VII. Read, translate and speak about surgical prophylaxis:

SURGICAL WOUND CARE

Surgical prophylaxis consists of the removal of Clostridium tetani and nonviable tissue from wounds and of the best possible reconstruction of aerobic wounds. Meticulous surgical care of wounds is performed when the following are carried out:

1. The wounds are taken care of at the earliest possible moment.
2. Aseptic technique, with the use of gloves, gowns, masks, sterile instruments, and the application of proper solutions to prepare the skin before the necessary operative procedures at the injured site, is observed.
3. During skin preparation, the wound should be covered with gauze to prevent further contamination.
4. Proper lighting is provided so that the surgeon can exactly identify and protect vital structures such as nerves and vessels.
5. Adequate instruments and adequate help are available so that there is the best possible and gentle retraction of structures in the wounds.

6. Bleeding is controlled with delicate instruments and with fine suture material so that a minimum of necrotic tissue is left in wounds.

7. Tissues are handled gently at all times so that necrotic tissue is not produced.

8. Complete debridement is carried out with scalpel excision of necrotic tissue and with removal of foreign bodies so that no pabulum is left on which any unremoved bacteria can propagate.

9. The wound is irrigated copiously with physiologic salt solutions to wash out minute avascular fragments of tissue and to eliminate foreign bodies.

10. If there is any doubt concerning a wound providing anaerobic conditions so that the tetanus bacillus can grow and produce its lethal toxin, the wound is left widely open and drainage is instituted when necessary.

VIII. Write a summary of the reading material of the unit.

UNIT 7

Texts: 1. Antisepsis and Asepsis.
Word-Building Elements: Term-element "pyo".

Pre-Text Assignments

I. Learn the following words:

To aggravate [ˈægravət] усугублять, усиливать
Examine the wound the surgeon saw that suppuration was aggravated.

Erysipelas [ˌɛrɪˈspiːləs] рожа, рожистое заболевание
A febrile disease characterized by inflammation and redness of skin, mucous membranes is called erysipelas.

Pyaemia [ˈpaɪəmiə] пиемия
Pyaemia is septic infection due to absorption of pyogenic germs.

Mastectomy [ˈmeɪstəktəmi] удаление грудной железы
Mastectomy takes place in the breast cancer.

Puerperal [ˈpjuərəprəl] родильный
Although Semmelweis soon succeeded in reducing the mortality from puerperal sepsis to one third his method did not gain recognition.

Putrefaction [ˈpjuːtrɪfækʃən] гниение, гнилостное разложение
Inspired by Pasteur's work on fermentation and putrefaction, the English surgeon J. Lister published in 1867 his antiseptic method of sterilization using carbolic acid.

II. Read and translate the following terms. Memorize the meaning of the term-element "pyo" - гной:

pyoptisis, pyostatic, pyotherapy, pyopneumothorax, pyocyte, pyocyst, pyogenic, pyoculture, pyorrhea.
III. Analyze the structure of the following terms:
pyosapremia, pyopneumopericardium, pyopneumoperitonitis, anti-
sepsis, asepsis, thyroidectomies, bacteriological, fermentation.

IV. Match the following English word combinations with the Russian ones:
1. wound infection 1. недостаточная обработка
2. gas gangrene 2. антисептическая обработка
3. insufficient cleaning 3. продуцировать значительную
4. antiseptic washing степень стерильности
5. to produce a considerable 4. газовая гангрена
6. degree of sterility 5. инфицирование раны

V. Find substitutes for the following word combinations:
1. decompensation of animal or vegetable 1. suppuration
   matter affected largely by action of micro-
   organisms
2. producing suppuration 2. thyroidectomy
3. the formation or discharging of pus 3. pyogenic
4. excision of the thyroid 4. mastectomy
5. excision of the breast 5. putrefaction

VI. Translate the following sentences and define the Voice of the verbs:

1. While disinfection of the hands was neglected, universal interest
   was directed to combating airborne germs. 2. Treatment was instituted
   with penicillin and cephalothin. 3. The automatic nerves are composed
   of two types of fibers: the preganglionic and the postganglionic. 4. Rand-
   om cultures of hands, fingers and finger tips were obtained from oper-
   ating room personnel. 5. The efforts of the physicians had been directed
   to the struggle against obvious wound infection and its causal agents

ANTISEPSIS AND ASEPSIS

Even in ancient India, Palestine and Greece, physicians demanded,
as a normal requirement, that the doctor’s hand and everything comes
into contact with the wound should be clean. They realized that, if this
precaution was neglected, and the wound was touched with the fingers,
suppuration was caused or aggravated. We must assume this if we are to
understand how at that time primary healing after operation was by no
means rare. Later, these enlightened precautions were to a great extent
forgotten until I. SEMMELWEIS (1847) once more put forward similar
requirements. In his day suppuration was regarded as normal, and
even desirable (pus bonum et loudabile) since the pyogenic was consid-
ered relatively the least harmful of the many possible forms of wound
infection. At the beginning of the bacteriological era (1876) frequently
more than half the surgical patients died from erysipelas, pyaemia, gas
gangrene or wound diphtheria. Death followed 50% of operations for open
fractures and over 50% of mastectomies or thyroidectomies, even in cli-
nics headed by surgeons of BILLROTH’s standing. According to MAL-
GAINE in Paris 300 of 500 patients operated on in 5 years died.
The brilliant Hungarian gynaecologist Ph. I. SEMMELWEIS
(1818—1865) had recognized intuitively the threat to wound healing
presented by insufficient cleaning of the doctor’s hands. His regulations (1847) forbade the physicians, on principle, to touch anything dirty (non-infection) and required careful antiseptic washing of hands and instruments in chlorine water before each operation. Although SEMMELWEIS soon succeeded in reducing the mortality from puerperal sepsis to one third (Formerly one parturient in ten had succumbed to puerperal sepsis) his method did not gain recognition.

While disinfection of the hands was neglected, universal interest was directed to combatting airborne germs, although, as we know today, these are of essentially small importance compared with the germs on the doctor’s hand, on instruments and on dressings (contact infection).

Inspired by Pasteur’s work on fermentation and putrefaction, the English surgeon J. LISTER (1827—1912) published in 1867 his antiseptic method of sterilization using carbolic acid. By using 2.5—5% solution of carbolic acid he succeeded in producing a considerable degree of sterility in his dressings and instruments. As a result of this, LISTER was able to improve his operative results very markedly and, for the first time, treated a series of 10 open fractures without a death.

However, only bacteriology produced the conditions essential for the creation of a system of reliable sterile procedures. Until then the efforts of the physicians had naturally been directed to the struggle against obvious wound infection and its causal agents (antisepsis). Now, however, the prevention of wound infection (asepsis) came more and more into the forefront of medical interest. In surgery this development is linked with names of the German surgeon von BERGMANN and the brilliant Russian surgeon N. PIROGOV.

Well-planned asepsis under careful bacteriological control is a pillar of modern surgery, side by side with the pillar of modern anaesthetic techniques.

By asepsis we mean the system based on the principle that everything which comes into contact with the wound (instruments, dressings, suture material, rubber gloves) is made absolutely germ-free (sterile).

The object of antisepsis is to reduce the infective agents in the wound, on the surface of the body, on the doctor’s hands and on the medical instruments, quantitatively and mechanically, and to render the rest harmless by disinfection, if possible to destroy them completely.

Whereas for antisepsis chemical (disinfectants, alcohol) and also today biological substances (antibiotics) are mainly used, for the sterilization of objects practically nothing but the application of heat may be considered, and heat only within temperature ranges that will not injure the objects nor affect their usefulness.

Today, sterilization of linen, dressings and instruments, rubber and glassware is carried out in specially constructed machines, the so-called sterilizers, or more modern, autoclaves. This apparatus is required to make an object completely sterile, i. e. free not merely from pathogenic organisms but from all living microorganisms. Spore forming bacteria prove practically resistant and are therefore used for testing the reliability of the apparatus.
Post-Text Assignments

I. Skim through the text and find the sentences expressing its main idea.
II. Read the text closely and answer the following questions:


III. Read the second paragraph of the text and write shortly about the attitude to suppuration in Semmelweis’s time.

IV. Read the third paragraph of the text. Find the words with ing- forms. Define their functions in sentences.

V. Skim through the last paragraphs of the text and discuss the information pertaining to a) antisepsis; b) asepsis; c) sterilization.

VI. Read, translate and entitle the following text:

Wound infection remains a cause of morbidity in surgical practice. Tissue traumatized during the most careful surgical procedure provides an excellent culture medium for bacterial growth. Since the time of Lister, it has been customary for surgeons to reduce the bacterial flora of their hands and forearms by surgical scrubbing.

In numerous studies a comparison has been made of the relative efficacy of the duration of the surgical scrub and of various scrubbing agents. Many hospitals still require scrub times in excess of what appears warranted by these investigations. To establish a reasonable time limit, a study was undertaken to compare the efficacy of a five versus a ten minute scrub. In addition, povidone-iodine, Betadine, and hexachlorophene, pHisoHex, the two most common scrubbing agents were compared.

Random cultures of hands, fingers and finger tips were obtained from operating room personnel, including surgeons, nurses, operating room technicians and resident staff. All persons were experienced in the scrubbing technique and used the procedure daily.

VII. Read, translate and discuss:

METHODS OF STERILIZATION

I. Sterilization by Boiling.

The application of boiling water is the oldest and simplest method of sterilization. Hot water at 100° C kills all microorganisms not forming spores at once, destroys the spores of anthrax within 12 minutes, but will not kill tetanus or gas-gangrene spores even on boiling for several hours.

2% of sodium carbonate in the boiling water, as recommended by SCHIMMELBUSH, kills even resistant spores in 30 minutes, and also prevents the rusting of the instruments, and raises the boiling point to about 104° C.
Heating with antiseptic mixtures is mainly used for the sterilization of instruments, syringes, cannula. It is simple, preserves the objects and may be considered sufficiently reliable for clinical medicine and general practice.

2. Sterilization in Flowing Steam (Low Pressure Steam Sterilization).
As early as 1881 steam at 97—100° C was used by R. Koch and Loffler for sterilization. For this method an upper vessel with a perforated base is placed on a pot filled with water. This steam at low pressure has exactly the same effects as boiling water without any added antiseptic, and is thus not sufficient for perfect sterilization of objects.

3. Sterilization by Saturated Compressed Steam (High Pressure Steam Sterilization).
When in these steamers — called autoclaves — the steam is prevented from escaping the pressure increases to 2—3 atmospheres and the temperature rises to 142° C. In this way even the most resistant earth spores are killed in a very short time.

4. Hot Air Sterilization.
Of all the methods using the application of heat, dry sterilization in hot air is the least sure. Dressings and rubber articles become brittle and are thus impaired. Sharp instruments do not withstand a temperature exceeding 180° C, and only with glass is this method really practicable.

5. Cold Sterilization.
It has been the practice in the past to degem heat-sensitive apparatus such as endoscopes of all kinds, urological and cardiological catheters, transfusion equipment, articles made of synthetics, at room temperature, with formalin vapour or by placing them in antiseptic solutions. Kammmerer (1958) and Mc Caughan (1959) point out the possibilities of effective cold solution with T-gas (90% ethylene oxide + 10% carbonic acid) in a vacuum (720 mm. Hg) for 4—6 hours. By this method all the microorganisms met in surgery are completely killed. The procedure is suitable for woollen blankets, sheets, dressings of all kinds and of course instruments made of metal, glass or rubber. Wide practical experience of this method is so far lacking.

The sterilization of instruments, syringes and cannulas is a difficult and very responsible problem, particularly in medical practice. Mere boiling is never sufficient, because tetanus, gas gangrene and other earth spores are not destroyed by this method. Sufficient sterilization can be attained in 15 minutes by adding 2% sodium carbonate to the boiling water. If 0.1% formalin is added, boiling time may even be reduced to 5—10 minutes.

7. Antiseptic Preparation of the Doctor's Hands.
In order to keep the doctor's hands as free from germs as possible — and the same applies to assistants — in everyday life, objects injected with pathogenic organisms should not be handled more than is essential, dressings and wounds should never be touched with the bare fingers but only with instruments and gloved hands (noninfection).
To eliminate the foreign germs mechanical cleansing with soap, water and a brush for at least 3 minutes is sufficient. Then a post disinfection is necessary in order to stop the passing on of germs for as long as possible.

The following are used as antiseptics for this purpose:
1. Alcohols (70% ethyl alcohol, 30—40% propylalcohol). Alcohol, as a lipoid soluble substance, penetrates into the skin and kills foreign and native germs.
2. Quaternary Ammonium Compounds like zephirol, quartamon, risedin, desogen. These substances which are those most generally used today, are well tolerated by the skin. This disadvantage is that they are inactivated by soap, so the hands must be well rinsed.
3. Phenol derivatives in the form of cresol soaps like lysol, sagrotan, vanvalanol. All of these can come into contact with soaps without impairment, and are therefore frequently combined with hard and liquid soaps and soap emulsions.
4. Mercury compounds such as sublimate and oxycyanate are hardly used today because they are badly tolerated by the skin.

Hands treated with antiseptic at first show no skin bacteria. However, pathogenic bacteria soon come out onto the surface of the skin from the glandular ducts, hair follicles and skin fissures, so that, in order to operate aseptically, sterile rubber gloves must be worn. If exceptionally, no rubber gloves are available the hands must be rinsed several times during the operation in the disinfectant solution. Aseptic operations should never be performed without rubber gloves.

UNIT 8

2. The Local Anesthetics.
Word-Building Elements: Prefix ir-.
Grammar: The modal verb «may».

Pre-Text Assignments

1. Learn the following words:
   Analgesia ['ænæl'dʒiːziə] потеря чувствительности к боли
   General anesthetics produce unconsciousness and varying degrees of analgesia.
   Reticular ['rɪtɪkjʊlə] сетчатый
   Loss of consciousness results from the reversible reduction of the activity in the reticular activating system.
   Excitation ['ɛksɪteɪʃn] сильное возбуждение
   The administration of an anesthetic results in progressive depression of the central nervous system, which may be preceded by varying degrees of excitation.
   Cerebellum ['sɛri'bɛləm] мозжечек
   Cerebellum is depressed by an anesthetic.
   Roving ['rəuvɪŋ] блуждающий
   The roving movements of eyeballs gradually diminish until they are lost.
Hypoxia [hærˈpɔksɪə] гипоксия
Dilatation of the pupils occurs, which may be due to loss of tone or to hypoxia due to respiratory depression.

II. Translate the following words with the prefix ir- (ir- prefix form of in- before r):
irregular, irradiated, irradiation, irrationality, irreducible, irregularity, irrelevance, irremediable, irrespective, irrespirable, irreversible.

III. Analyze the structure of the following terms:
relaxation, sensation, subconsciousness, eyeball, surgical, vomiting, respiration, paralysis, intravenously, overdosage.

IV. Match the following English word combinations with the Russian ones:
1. respiratory rate 1. расслабление мышц
2. loss of consciousness 2. уменьшить безопасность
3. to reduce the safety 3. частота дыхания
4. muscular relaxation 4. потеря сознания
5. to depress the cerebellum 5. подавлять функцию мозжечка

V. Find substitutes for the following word combinations:
1. an agent that produces anesthesia 1. local anesthesia
2. anesthesia which affects the whole body 2. ganglion
3. loss of feeling or sensation 3. general anesthesia
4. anesthesia confined to a limited area 4. anesthesia
5. any mass of gray nervous substance which serves as a center of nervous influence 5. anesthetic

VI. Make the following sentences interrogative:
1. Sometimes pneumonia develops and even death may occur in two of three days. 2. The acute congestive type of bronchopneumonia may be seen at any age, but is more frequent in young infants. 3. In some cases the onset may be gradual, even insidious. 4. The symptoms may steadily increase in intensity for four or five days, until the maximum is reached. 5. The effects of grippe in the patient may last until the following warm season.

THE GENERAL ANESTHETICS

General anesthetics produce unconsciousness and varying degrees of analgesia and muscular relaxation. Many of them produce analgesia before loss of consciousness and continue their analgesic effect after loss of consciousness, so that sudden painful stimuli do not break through to produce reflex physiological changes that may reduce the safety of the operative procedure. No substances in medicine have contributed more to human comfort than the anesthetics. They have made modern surgery possible and have transformed the operating room from a place of misery to one of tranquillity and peace.

Anesthesia is produced by progressively increasing the amount of the anesthetic in the inspired air and thus in the blood and brain. Loss of consciousness is one of its primary prerequisites. It results from the
reversible reduction of the activity in the reticular activating system. This prevents the activation of the cortex and thus induces loss of consciousness.

The administration of an anesthetic results in progressive depression of the central nervous system, which may be preceded by varying degrees of excitation. These drugs first depress the cerebral cortex via the RAS (reticular activating system) and then the basal ganglia and cerebellum. This is followed first by sensory and then motor paralysis of the functions of the spinal cord from below upward.

**Stages of Anesthesia.** The action of the general anesthetics may be divided into four stages. These stages vary considerably in character and duration, depending upon the nature of the anesthetics as well as the speed of induction and the manner in which it is administered. They are best seen with use of chloroform and ether.

**Stage I. Analgesia.** The patient is conscious and experiences sensations of warmth, remoteness, drifting, falling, and giddiness. There is a marked reduction in the perception of painful stimuli.

**Stage II. Subconsciousness Excitement.** This stage begins with the loss of consciousness. The inhibitory control of the higher centres is removed and the subconscious emotions take over. The responses in this stage vary with different individuals. Some patients pass through this stage peacefully and quietly. Others become very excited and may cry or laugh. There may be excessive and even violent, struggling movements. The blood pressure increases, the pulse is rapid and strong and perhaps irregular. The respiration is rapid and irregular. The roving movements of the eyeballs are at a maximum in this stage. The reflex pupillary dilatation may be increased with emotional excitement. All reflexes present. Excessive salivation, swallowing, coughing, and vomiting may occur.

**Stage III. Surgical Anesthesia.** This is the stage of unconsciousness and repression or paralysis of reflexes. It is divided into four planes:

**Plane 1.** The appearance of full, rhythmic breathing marks the beginning of Stage III. However, the respiratory rate and volume may be modified throughout the operation by preoperative medication and the type of surgery. The roving movements of eyeballs gradually diminish until they are lost at the end of this plane. The coughing, swallowing, vomiting, and conjunctival reflexes disappear. Muscular relaxation of the extremities but not of the abdominal muscles is observed.

**Plane 2.** The respiration is regular and relatively deep. The muscles of the eyeballs are relaxed and the eyes are fixed. Muscular relaxation is improved so that cutting of the skin or muscles does not usually produce reflex contraction. Most surgical procedures may be carried out at this level. Patients may be maintained in this plane for long periods of time without experiencing harmful effects.

**Plane 3.** The respiration is regular, but the inspirations are not so deep as formerly and there is an increase in the respiratory rate. Relaxation of the abdominal muscles is increased. Paralysis of the intercostal muscles occurs. Chest movements are diminished and abdominal breathing becomes more pronounced.
Plane 4. The respiration is rapid and shallow and may be irregular. The inspirations are short and gasping. The breathing is abdominal. Dilatation of the pupils occurs, which may be due to loss of tone or to hypoxia due to respiratory depression. 

Stage IV. Respiratory Paralysis. This stage begins with central respiratory paralysis and ends with cardiac failure and death unless restorative measures are instituted. In this stage all functions of the central nervous system are depressed.

Recovery. If the anesthetic is removed and the respiration is reestablished and sustained before the heart stops, the symptoms may be reversed. As recovery proceeds, the signs of the various stages occur in the reverse order. The patient is subject to reflex stimuli and recovery excitement, which may be caused or increased by pain.

Post-Text Assignments

I. skim through the text and find the sentences expressing its main idea.

II. Read the first and second paragraphs of the text and answer the following questions:


III. Find correct answers for the following questions:

1. What is anesthesia produced by? 2. What does the administration of an anesthetic result in? 3. How many stages of anesthesia are known for us? 4. When does the second stage of anesthesia begin? 5. Do the coughing, excessive salivation and vomiting occur during anesthesia?

IV. Read the text under the title «Stages of Anesthesia» and discuss the information obtained.

V. Read the text under the title «Surgical Anesthesia» and speak about four planes of surgical anesthesia.

VI. Look through the text again and write a summary.

VII. Translate into English:

Спинномозговое обезболивание не может считаться вполне безопасным, так как в связи с ним иногда наблюдаются остановка дыхания и падение сердечной деятельности. Проведение обезболивания возможно при нормальном артериальном давлении и требует проведения соответствующих манипуляций: впрыскивание растворов любеллина, эфедрина, кофеина, камфары, внутривенные вливания физиологического раствора, глюкозы и переливание крови. Падение сердечной деятельности проявляется обычно резким побледнением больного, появлением тошноты, рвоты.

VIII. Read the following text:

THE LOCAL ANESTHETICS

Local anesthetics are substances that produce loss of sensation at the site of application. They block conduction along the motor and sen-
sory fibers. If the concentration of the anesthetic is controlled, there is loss of sensation without motor paralysis, since the sensory fibers are affected before the motor fibers.

Local anesthetics may be divided into two groups according to their actions. Drugs such as cocaine and numerous synthetic derivatives act specifically on the sensory nerves or their endings. Other drugs such as ethyl chloride or carbon dioxide snow cause local anesthesia by the production of cold. Ethyl chloride, a liquid, is sprayed on the skin and evaporates so rapidly that it chills or even freezes the area.

**Pharmacological Action.** Local anesthetics manifest a selective action on nerve structures and interfere with nerve conductivity. They produce their effects wherever injected, as at sensory nerve endings, ganglionic synapses, myoneural junctions, or nerve trunks. The action is reversible. The mechanism of action is not clearly understood.

**Methods of Administration.** There are several methods for the administration of local anesthetics.

1. Topical (Surface) Anesthesia. The drug is applied directly to the mucous membrane of the eye, nose, or throat and occasionally to the urethra, rectum, or vagina. A solution may be painted or sprayed on a surface or instilled, as in the eye. Powders, ointments, creams, and lotions may be applied topically to the skin.

2. Infiltration Anesthesia. Weak solutions of the local anesthetics in physiological salt solution are injected under the skin in painful areas. A wheal may be produced for an incision. Later the anesthetic solution may be injected into the site of the incision to anesthetize the nerve endings and the exposed nerve trunks.

3. Conduction or Regional Anesthesia. The anesthetic solution is injected into the vicinity of the nerve trunks which supply a definite area. The addition of sodium bicarbonate to the solution causes the drug to penetrate the fibre more readily.

4. Spinal anesthesia. The anesthetic solution is injected within the dural membrane surrounding the spinal cord and nerve roots.

5. Epidural Anesthesia. Spinal nerves are blocked in the epidural space as they emerge from the dura and pass into the intervertebral foramina. The anesthetic solution is deposited outside the dura and within the bony spinal or caudal canal. The deposition of the anesthetic solution may be accomplished at the thoracic, lumbar, or caudal (sacral) area.

6. Intravenous Procaine Analgesia. A solution of procaine is injected intravenously. The purpose is mainly to alleviate the sensation of pain.

**Toxicity of Local Anesthetics.** Local anesthetics produce acute toxic effects if they are absorbed in sufficient quantities in the circulating blood. The type of anesthetic, the rate of injection, the concentration, the volume of the solution, and the site of injection are factors in poisoning. There are two types of toxic reactions: 1) on the central nervous system, producing cortical stimulation resulting in convulsions, and medullary depression; and 2) on the heart, depressing the myocardium and interfering with the conducting mechanism, which causes slowing of the heart. The drugs are destroyed by the esterases in the plasma and
by the liver. Serious liver damage may be caused by overdosage. Some individuals are more sensitive to these drugs. In susceptible persons even small amounts produce acute poisoning.

IX. Speak about the methods for the administration of local anesthetics.

SECTION V

Oncology

UNIT I

Texts: 1. Types of Tumours.
2. Progress in Cancer Treatment.
Word-Building Elements: Prefix fore-.
Grammar: Object Clauses.

Pre-Text Assignments

1. Learn the following words and word combinations:

Tumour [ˈtjuːmər] опухоль
The nature of tumours is still unknown.
Postmortem findings данные вскрытия трупа
Postmortem findings help to discover the nature of the disease.
Neoplasm [ˈniːɒplæzm] новообразование
Neoplasms are the kind of tumours.
Benign [ˈbɛnɪn] доброкачественный
Carcinogenic agents sometimes produce benign neoplasms.
Malignant [məˈlɪgnənt] злокачественный
Malignant tumours may arise secondarily on the soil of a benign tumour.

II. Form new words adding the prefix fore- (the prefix fore- means пред-, перед-).
Translate the words:

Model: forearm предплечье
foresee предвидеть
cast, tooth, tell, thought, warn, finger, brain.

III. Analyze the structure of the following terms:

histopathological, cytoplastic, neoplastic, hydrocarbon, syncarcinogenesis, laryngectomy.

IV. Match the following English word combinations with the Russian ones:

1. unnatural growth 1. структура опухоли
2. black bile 2. данные вскрытия трупа
3. postmortem findings 3. патологический рост
4. tumour structure 4. недостаток кислорода
5. oxygen deficiency 5. черная желчь

V. Find an international and a Russian equivalent of the following:

Model: intelligent интеллигентный, воспитанный
civilization, theory, interpretation, structure, process, logical, systematic, integration, genesis.
VI. Translate the following sentences. Pay attention to the type of the Subordinate Clauses:

*Pattern:* The doctor in charge reported that the patient’s condition improved much after the operation.

Лечащий врач доложил, что состояние больного значительно улучшилось после операции. *(Object Clause)*

1. We know that many infectious diseases are caused by viruses.
2. It has been established that tissue therapy should be accompanied by other methods of treatment accepted for the given disease. 3. It has been observed that all the patients to whom tissue had been grafted display improved spirits and appetite. 4. The doctor wants to know what the patient takes when he can not sleep. 5. The patient was eager to know when he would be discharged from the hospital.

**TYPES OF TUMOURS**

*The Nature of Tumours.* If, up to the present time, our concept of the nature of tumours is still problematical in many ways, it is the more surprising that tumours with their irresistible urge to grow, were already regarded as something peculiar by the physicians of ancient civilizations. «Cancer» was mentioned about 3500 years ago in the ancient Egyptian Ebers papyrus. In the era of Greek medicine it was regarded as an unnatural growth caused by black bile, and was called «carcinoma». This theory remained acceptable for more than a thousand years. More intelligent interpretations and discoveries did not begin to appear until medical schools and universities were founded at the end of the Middle Ages, when postmortem findings were given more attention, and the microscope constructed about 1590 gradually made it possible to recognize the structure of tumours. The further development of the science of tumours (oncology) leads, through Morgagni, the founder of modern morbid anatomy (1761), to the related theories of John Hunter, Bichat and Zaennec at the turn of the 18th to 19th century. The tumour was then regarded as a product of the activity of the body, which provided for its nutrition and growth, and with which its structure was comparable. Finally, the histopathological view of tumour structure put forward by Johannes Müller (1838) and Rudolf Virchov (1863) forms the logical preliminary conclusion of the process of discovery.

*Definition of Tumours.* In modern oncology a tumour is defined as pathological growth lacking the systematic integration in the body which is characteristic of physiological growth. The tumour differs from any other proliferation of tissue in its excessive growth, which persists after extinction of the stimulus which provoked it.

*The Genesis of Tumours.* The causal and formal genesis of tumours (neoplasms, blastomas) has been the subject of many theoretical interpretations, and still gives rise to lively discussion. The mutation theory of K. H. Bauer synthesizes all the knowledge acquired hitherto and the classical theories in the assumption of a mutational change (due to a hereditary spot) in the cellular property of a tissue in the body, which shows itself in the new «race» of tumour cells, with corresponding biolo-
gical peculiarities. This chromosomal theory is opposed by the supporters of the cytoplasmic hypothesis, who attribute the peculiar biology of the tumour cell to a change in the cytoplasm (due to carcinogens, oxygen deficiency, etc.). Perhaps both theories contain a grain of truth, and should be applied alternatively or together in different tumours. A neoplastic germ first develops from normal cells, in which neoplastic growth occurs only after the action of further (similar or dissimilar) stimuli.

In an elementary way, a tumour may be set down as the product of a reaction to stimuli which alter cellular metabolism, the «neoplastic reaction» differing from the «inflammatory» reaction mainly by its irreversibility.

The Aetiology of Tumours. A number of tumour-producing causes have been analysed empirically, some of which also reveal their character in animal experiments. They sometimes cause benign and sometimes malignant neoplasms, the latter, in some cases, arising secondarily on the soil of a benign tumour.

Among the chemical substances, tar products are known to be tumorigenic or carcinogenic. This discovery dates back as far as 1975, when Pott attributed the scrotal cancer of English chimney-sweepers to the products of coal combustion (soot). After further observations in workers with brown coal or tar or in paraffin factories had produced similar experiences, the experimentally reproduced tar cancer of the skin in mice and other laboratory animals proved the correctness of the relationship. In actual fact, it is the aromatic hydrocarbons contained in tar which are carcinogenic.

The inhalation of aniline vapour may, after a latent period of many years, cause benign and malignant tumours of the bladder. On the foundation of the arsenic eczema of vineyard workers (caused by sprays against vineyard pests) carcinomas develop on the palms and soles. Chromate and asbestos dusts have been blamed for the development of lung cancer.

Pathogenic microorganisms, especially parasites and viruses constitute a second group of causes of cancer. They prove carcinogenic chiefly in areas of chronic inflammation, partly caused by themselves. In this class are, among others, certain nematodes with which Fibiger (1913) fed rats and produced cancer of the forestomach, also liver flukes and coast flukes, which may cause cancer of the biliary ducts in man. In the tropics, schistosomiasis causes cancer of the bladder. Tumours caused by viruses include warts in children, some papillomas (e.g., in the larynx) and condylomas, and several tumours of animals. Recent investigations have shown that the virus in many tumours is a secondary product of a neoplasm produced by some other cause.

A contrary opinion is that the virus theory should be applied to all tumours.

Occasionally a mechanical cause of tumours seems probable or admissible, provided that the injury is repeated or chronic. For instance, Indian draught bullocks not infrequently develop cancer of the horn subjected to the one-sided strain of the rope. Trauma or accidents and
any injuries caused by them appear from experience to be accepted as causes of cancer only in extremely rare cases. In 3.7 million gunshot injuries Dietrich found only 40 malignant tumours near the site of the wound.

Cancer of actinic origin (from electro-magnetic radiations) is due, according to Bauer, to the absorption of energies which cause changes in living tissue in the sense of the mutation theory. Besides the (infra-red) heat waves, tissue injuries caused by indirect contact with hot substances chiefly come into consideration. The occurrence of malignant tumours in inguinal testicles can be explained by the «overheated» environment. Ultraviolet rays play an important part in the production of «light cancer» in seamen and countrymen. The carcinogenic action of Roentgen and radium rays, to which physicians and research workers were particularly exposed in the early days of radiology, is sufficiently well known.

Some carcinogenic substances or factors are only «conditionally carcinogenic», that is, they do not, by themselves, cause tumours, but they may produce true tumours in conjunction with other causal factors. This complex combination of irritants and conditions is indicated in the concept of syncarcinogenesis.

Spontaneous tumours, especially cancer, can occur, in principle, in both domestic and wild animals, down to insects. Some animal tumours have proved to be transplantable or inoculable, and have been cultivated in tumour research laboratories for decades.

The imperative need to characterize tumours as benign or malignant is a justifiable requirement in medical practice. In spite of all advances this need cannot yet be satisfied by any exact, scientific method, and we have to resort to an empirical biological assessment of the type of tumour.

**Post-Text Assignments**

I. Skim through the text and define its main idea.

II. Read the text closely in paragraphs. Define the subject of each paragraph.

III. Answer the following questions:

1. When and where was «cancer» mentioned for the first time? 2. When did the term «carcinoma» appear? 3. What possibility did the construction of microscope give the scientists? 4. What can you say about the further development of the science of tumour? 5. What is the definition of a tumour in modern oncology? 6. What is the difference between a pathological and physiological growth? 7. What is the difference between the chromosomal and mutation theories? 8. Where does a neoplastic germ develop first? 9. How may a tumour be set down in an elementary way?

IV. Read the text under the title «The Aetiology of Tumours» and speak about tumour producing causes.

V. Comment on the types of tumours using the following plan:

1. Historical review of the problem of types of tumours.
2. Definition of tumours.
3. The genesis of tumours.
4. The aetiology of tumours.
5. Tumour producing substances.

VI. Pick out from the text all the medical terms pertaining to Oncology and translate them.

VII. Find in the text the English equivalents of the following word combinations and translate the sentences containing them:

злокачественная опухоль, болезненные симптомы, патологические изменения, канцерогенные вещества, доброкачественная опухоль, определение опухоли, данные вскрытия трупа.

VIII. Read and translate without using a dictionary. Describe the patient's condition:

REPORT OF A CASE

The patient, a 68-year-old man, had cancer of the larynx with involvement of the right cervical lymph node. At laryngectomy with right radical neck dissection a speech fistula was made in the manner described by Montgomery. Involvement of the left cervical node became apparent six weeks later, and left radical neck dissection was performed. Two weeks thereafter a speech appliance was made, which permitted him to speak well after two days of practice. The total time lapse from laryngectomy to a point when he could speak adequately was eight weeks, and this would have been shorter had he not needed the second neck dissection.

IX. Read the following text and define the problem discussed:

SUMMARY

Despite technical advances, the number of patients with hepatic metastases not visualized by liver scanning remains high; more importantly, there is a significant incidence of false-positive reports. Preoperative scans of 70 patients with a high probability of abdominal tumour were compared with the incidence of hepatic metastases found at laparotomy. The overall accuracy of the liver scan was 84%; there were 13% false-positive and 23% false-negative results. Thus, the change for error is too high to determine the existence of hepatic metastases on the results of liver scanning alone.

X. Read, translate and retell:

PROGRESS IN CANCER TREATMENT

Soviet doctors have made appreciable progress with cancer. Thirty years ago eight out of ten cancer patients died. Now nearly all who have cancer of the skin, lip and genitals are saved. It is notable that in the last five years the cancer mortality in men has been stabilized and for women there is a decline in cancer. Of the 1,700,000 people on the records of oncological clinics who have had cancer treatment more than 400,000 have survived for ten years and longer.
The progress in cancer research is a result of successes in biochemistry, molecular biology, genetics, immunology and virology. Soviet experiments have proved that viruses of animal species may produce malignant tumours in other animals. When test monkeys at the Institute of Experimental Pathology and Therapy of the USSR Academy of Medical Sciences were given suspensions from humans suffering from cancer of hematogenic system they developed a form of leukemia. A possible agent of this disease has been isolated and its role in the development of human cancer is being studied.

Our immunologists have found unique early diagnosis methods for cancer of the liver. The present research aims at accurate early detection for every type of malignant tumours.

Progress has been made in developing drugs that prolong the cancer patients' lives. Several Soviet preparations can be mentioned — ftorafur used for cancer of the breast and the large intestine, rubomycin used in acute leukemias, bruneomycin, ftorbenzotein and others. Currently there is a lot of research on drug combinations and applications. Some malignant tumours that do not yield to any single preparation have reacted to combinations of drugs.

The Soviet cancer control programme includes both social and medical measures. There are many specialized treatment, prevention and research centres where surgery, radiation and chemotherapy are used. The combination of chemotherapy, surgery and radiation (including elementary particle beams and laser pulses) more and more often brings positive results. Further research and development of preventive and curative methods will lead to new achievements.

UNIT 2

       2. Reports of Cases.
Word-Building Elements: Suffixes -ent and -ant.
Grammar: Absolute Participle Construction.

Pre-Text Assignments

1. Learn the following words and word combinations:
   Cancer ['kænsə] рак
   Cancer is a malignant tumour which arises from epithelial cells.
   Aetiology [ˈeɪtɪələdʒi] этиология
   The aetiology of cancer is still unknown. Cigarette smoking plays a major part in the aetiology of lung cancer.
   Connective tissue соединительная ткань
   A malignant tumour is made up of connective tissue enclosing epithelial cells.
   Metastasis [mɪˈtæstəsɪs] метастаз
   Metastases may occur in different parts of the organ.
   Susceptibility [səˈseptəˈbɪlɪtɪ] восприимчивость
   Susceptibility to cancer increases with age.
II. Analyze the structure of the following terms: cancerlike, cancerism, cancerous, carcinogenic, metastasize, metastable, metastatic.

III. Form adjectives adding the suffixes -ent and -ant. Translate the words:

*Model:* existence — existent существующий
importance — important важный
malignancy, dominance, difference, inheritance, importance, significance, independence, frequency.

IV. Match the following English word combinations with the Russian ones:

1. extensive research 1. обширное исследование
2. mammary gland 2. вирусный гепатит
3. surrounding tissue 3. рак печени
4. liver cancer 4. молочная железа
5. viral hepatitis 5. окружающая ткань

V. Translate the following sentences. Pay attention to the Absolute Participle Construction:

*Pattern:* The patient's temperature being high, the doctor prescribed him antibiotics.

Так как температура больного была высокой, врач prescribed ему антибиотики.

1. One of the tourists having broken his leg, the group could not continue the trip. 2. The patient being very weak, the surgeon postponed the operation. 3. The patient's stomach being lifted, the surgeon examined it thoroughly. 4. The wound having been healed, the patient's condition improved and he was discharged from the hospital. 5. Diarrhoea occurring very often, the patient was directed to the hospital for examination and treatment. 6. The grippe having been complicated by pneumonia, the patient felt much worse.

CANCER

The problem of cancer is being discussed in innumerable papers from all parts of the world because cancer still continues to be the first among human diseases. Many investigators and physicians of all continents carry on extensive research work to find out the aetiology of cancer and its successful treatment.

The term 'cancer' was first used by Gallen (231—201) a famous Roman physician who had described the disease of a mammary gland under this term.

Cancer, or Carcinoma, as it is often called, is a malignant tumour which arises from the epithelial cells. A tumour is a mass of new tissue which grows independently from its surrounding structures. A malignant tumour is made up of connective tissue enclosing epithelial cells. Some tumours remain localized, others rapidly invade healthy tissue and metastasize leading to early death. The incidence of carcinomas comprises 90% of all malignant tumours, the rest are sarcomas. The symptoms being vague or absent at an early stage, cancer is a very dangerous disease for life.
There are considerable variations of opinion regarding the development of cancer, but the final concept concerning all forms of cancer, except certain types, is still unknown. The development of certain types is connected with the so-called carcinogenic (causing the cancer) substances and rays. It has been proved that cancer may develop due to contact with certain chemical substances, such as aromatic amines, chromic acids, arsenic acids, anilines and others. Cigarette smoking plays a major part in the aetiology of lung cancer. 96% of patients with lung cancer were heavy cigarette smokers. Certain viruses are also considered to be carcinogenic. Recently it had been shown that some types of viruses may develop carcinoma. These findings have been confirmed in experiments on animals.

The distribution of different types of cancer vary geographically. The incidence of lung cancer is much higher among Europeans. In non-European countries we find quite different distribution. In South Africa, for example, 50% of all types of cancer comprise carcinomas of the liver, while in Europe liver-cell carcinomas comprise only one per cent. The high frequency of liver cancers in certain tropical countries could be related to the incidence of viral diseases of the liver in the same countries. Many investigators suggest that viral hepatitis could represent a precancerous disease.

The age significantly affects the incidence of cancer. Susceptibility to cancer increases with age. The most important thing in the prognosis of patients with carcinoma is the grade of malignancy, and, therefore, the sooner the diagnosis is made, the better the prognosis. Each type of cancer is curable if it is timely recognized and proper treatment is administered.

Post-Text Assignments

1. Skim through the text and define its main idea.

2. Read the text closely and answer the following questions:

   1. What disease continues to be the most dangerous among human diseases?
   2. What is the attention of many investigators attracted by?
   3. Whom was the term «cancer» used first?
   4. What kind of disease is cancer?
   5. What is the malignant tumour made up of?
   6. What do metastases lead to?
   7. What is the final concept concerning the aetiology of lung cancer?
   8. What carcinogenic substances do you know?
   9. What plays a major part in the aetiology of lung cancer?
   10. How does the distribution of different types of cancer vary?

3. Find the English equivalents of the following Russian word combinations in the text. Translate the sentences containing them:

   общирное исследование, этиология рака, успешное лечение, рак молочной железы, здорова ткань, соединительная ткань, канцерогенные вещества, вирусный гепатит, предраковая болезнь, правильное лечение.

4. Write all the names of carcinogenic substances out of the text and learn them.

5. Choose correct answers to the following questions:

   1. Where does cancer arise from?
      1. Cancer arises from the healthy tissue.
      2. Cancer arises from the epithelial cells.

3. Cancer arises from the surrounding structures.
4. Cancer arises from the connective tissue.
5. Cancer arises from the adjacent tissues.
1. Drinking hot liquid plays a major part in the aetiology of lung cancer.
2. Exposure to dust plays a major part in the aetiology of lung cancer.
3. Cigarette smoking plays a major part in the aetiology of lung cancer.

3. Among whom is lung cancer higher?
1. Lung cancer is higher among Africans.
2. Lung cancer is higher among Asians.
3. Lung cancer is higher among Europeans.

VI. Read and translate the "Reports of Cases" without using a dictionary. Discuss the cases:

REPORTS OF CASES

*Case I.* A 5-month-old boy was admitted because of a smooth, soft, nonmovable mass that occupied almost the entire right upper quadrant. Blood chemistries and roentgenograms of the chest revealed normal results. A transfemoral aortogram showed stretching and bowing of the intrahepatic arterial branches but no tumour blush. The diagnosis then was either metastatic or primary tumour in the right lobe of the liver; the left lobe was not adequately evaluated.

Through a thoracoabdominal incision, a cyst 4 to 5 cm in diameter was dissected from almost exactly between the two lobes of the liver. Part of its bed was lined with the obliterated branches of the umbilical vein. The ran surface was closed with chromic catgut and the operation site drained. Except for some pulmonary problems, the postoperative course of this patient was uneventful.

The cyst measured 9.5 cm in diameter, and its wall was 2 to 3 cm thick. The cyst contained a clear yellow cavity itself, was triloculated by broad bands of fibrous tissue. The histologic appearance of the encapsulated tumour was a hap-hazard arrangement of four elements: irregular masses of normal-appearing hepatic cells without definite architecture; cysts of various size filled with lined flattened epithelium; areas of young cellular connective tissue; and denser areas of mature fibrous tissue occasionally containing bile.

*Case II.* A 38-year-old woman was admitted for the treatment of menorrhagia and fibroid uterus. During the course of hysterectomy, a solitary, solid, pediculated tumour 4 cm in diameter was found to be attached to the inferior margin of the right lobe of the liver by peritoneal folds. This pedicle was excised, and the base was sutured with chromic catgut.

*Case III.* A 34-year-old white male was admitted to the University of Michigan Medical Center after an excision four months earlier at another hospital of what was thought to be a lipoma of the right buttock. On transfer here, he was toxic; febrile, 102 degrees F., and had signs of recent weight loss. He had constant pain in the right hip.
Examination of the right buttock showed it to be enormously enlarged, tender and fluctuant. A foul smelling, reddish brown purulent discharge exuded from an old drain site. There was marked limitation of extension and of flexion of the right hip.

Results of liver function tests, roentgenograms of the chest and films and scans of the bones, including the pelvis and long bones, were normal.

The previous operation and the extensive malignant lesion of the buttock made hemipelvectomv the procedure of choice. The presently described technique using an anteriorly based flap for hemipelvectomv evolved from the need to cover a large defect of the posterior part of the buttock.

Prior to discharge, chemotherapy was initiated, and he was fitted with a Canadian prosthesis and was ambulating well. Three months postoperatively, he was noted to have a pulmonary metastasis. At nine months postoperatively, he remains alive but with known recurrent pulmonary disease.

UNIT 3

| Texts: | 1. Strontium Diagnostics of Malignant Tumours of Bones.  
| Case Report.  
| Word-Building Elements: Term-element «os->.  
| Grammar: Gerund. |

Pre-Text Assignments

I. Learn the following words and word combinations:

**Osseus [ˈɔsɪəs] костный, костистый**

**Osseus blastoma** is a grave disease of bones.

**Involvement [ɪnˈvɒlvmənt] поражение, вовлечение**

**Involvement of the whole organism by cancer means death.**

**Scintigraphy [ˈsɪntɪɡrəfi] синтиграфия**

**Scintigraphy provides valuable information about primary and metastatic bone tumours.**

**Evaluation [ɪˌvæljuˈeɪʃn] оценка**

**Evaluation of the results of scintigraphy is a very important component in making a diagnosis.**

**Recurrence [rɪˈkærəns] возвращение, рецидив**

**Recurrence of a disease means return of symptoms after a temporary absence.**

**Irradiation therapy** лучевая терапия

**Irradiation therapy is used in the treatment of cancer.**

II. Analyze the following terms. Memorize the meaning of the term-element «os->

**кость:**

osteal, ostectomy, osteitis, osteoarthritis, osteoblast, osteoclast, osteoelascity, osteogenesis, osteology, osteosuture, osteotomy.

III. Match the following English word combinations with the Russian ones:

1. precise diagnosis  
2. early diagnosis

1. патологические изменения
2. остеогенная саркома
3. osteogenic sarcoma 3. точный диагноз
4. by intravenous route 4. внутривенно
5. pathological changes 5. ранняя диагностика

IV. Find substitutes for the following word combinations:
1. the study of viruses 1. decline
2. energy radiated in the form of waves or particles 2. virology
3. an acute or chronic disease of unknown origin which affects the leucocytes in the tissues 3. chemotherapy
4. progressive decrease 4. leukemia
5. treatment by chemical substances 5. radiation

V. Translate the following sentences. Define the form and functions of the Gerund.

Pattern: Making a correct diagnosis and prescribing a proper treatment lead to a quick convalescence. (Subject)
Постановка правильного диагноза и назначение правильного лечения ведут к быстрому выздоровлению.

1. Itching is due to sugar balance impairment in the organism.
2. Many people do not appreciate the important difference between retaining health and regaining it.
3. The habit of putting into the mouth different subjects gives germs the opportunity to pass directly from one mouth to another.
4. Another bad habit is that of allowing the fingers to touch the face, eyes, or lips.
5. Spitting into wash basins when cleaning the teeth, is dangerous for another user who may wash his face in the basin.
6. After many years of experimenting Louis Pasteur was successful in preventing hydrophobia or rabies in man. Pasteur discovered that souring of wine was caused by living organisms. He began treating many diseases by the use of vaccines.

STRONTIUM DIAGNOSTICS
OF MALIGNANT TUMOURS OF BONES

The precise diagnosis of primary and metastatic malignant bone tumours is of basic importance for the choice of the therapeutical policy, for obtaining optimal therapeutic results and for determining the prognosis of the disease. The bone involvement by metastasis in the presence of malignant tumours in the body is frequently seen.

The early diagnosis of osseous blastomas using X-ray methods of investigation is confronted by certain difficulties. Thus, the detection of trabecular bones metastasis becomes possible only in calcium content decrease by 30 to 50 per cent whilst vertebra metastasis are hardly detectable before they reach 1—1.5 cm in size.

The introduction of the radioactive isotopes as a diagnostic method permitted the conduction of a number of metabolic investigations in patients with bone tumours and increased accumulation of Sr in and around the osteogenic sarcomas.

Materials and Methods. In the Department of Medical Radiology at the Postgraduate Medical Institute (ISUL) — Sofia, 97 scintigraphic
investigations on 42 patients with primary and metastatic malignant tumours have been conducted: with primary bone tumours — 10 patients; clinically suspected for bone metastasis — 18 patients; with proved bone tumours after surgical intervention — 11 and after irradiation therapy — 3 patients.

To the patients Sr under the form of SrCl₂ was administered by intravenous route. The scintigraphic investigation was made at 24 and 48 hours and in some patients even later. The scintigraphic findings were compared with the clinical course of the disease, the histological results and the data from the laboratory and X-ray investigations.

Results and Discussions. Increased radioactive strontium accumulation in relation with the increased mineral metabolism in the blastomatous process area had been established scintigraphically in patients with primary malignant bone tumours. Pathological findings were observed in 9 out of 10 patients with primary malignant tumours and dubious — in 1 patient. The dubious scintigraphic findings in the last patient were explained by the fact that the bone metabolism alterations were not manifested so clearly in order to obtain a convincing scintigraphic image. It is a characteristic feature that by scintigraphy the real size of the blastomatous process is determined, whilst by X-ray investigation the neoplasm picture obtained is always smaller than the real one. This is due to the fact that by the scintigraphic investigation the increased mineral metabolism expressed especially in the bone tumour periphery is established, whilst the X-ray finding is a representation mainly of the central part of the neoplastic process, where more significant changes in the calcium content are present.

Increased radioactive strontium accumulation in the zone of bone metastasis was established by the scintigraphic investigations. Pathological findings were observed in 11 and normal in 7 out of 18 patients suspected clinically for having metastasis. The scintigraphic investigations results were confirmed by the clinical course of the disease and by other investigations. In 3 patients with clinical and scintigraphic data for bone metastasis, the X-ray examination was normal. The false negative X-ray investigation findings, in the presence of bone metastasis showed that the X-ray method is not reliable for early diagnosis in some cases. For this reason, even in the least suspicion for bone metastasis, the carrying out of scintigraphic investigations is absolutely mandatory.

After surgical removal of the bone tumour, the scintigraphic investigation should be applied with greater attention and the image obtained should be interpreted in close connection with the clinical manifestations of the disease and with the other investigation data. Increased accumulation in the zone of the bone fragments and bone transplantation is not pathognomonic for recurrence, but shows the increased metabolism connected with the osseous tissue reparative alterations. These alterations continue for 10 to 12 months after the surgical intervention. Normal scintigraphic findings are obtained in patients in whom the surgical intervention precedes the scintigraphic investigations with more than one year. When the scintigraphic image is normal first and later becomes positive again, it concerns most probably a recurrence. From a total
of 11 patients with primary bone tumours in which surgical intervention have been performed, in 5 patients an increased radioactive strontium accumulation was found, whilst in the remaining 6 it was within the normal.

In patients undergoing irradiation therapy, the scintigraphic image interpretation is likewise difficult, because here too, the reparative changes are connected with increased metabolism. Normal radioactive strontium accumulation after the osseous tissue reparation is terminated, shows the lack of recurrence of the disease, whilst the late occurrence of increased accumulation of the radioactive nucleide is usually connected with recurrence of the blastomatous process. The small number of patients in this group does not warrant a more definite evaluation of the results obtained.

In conclusion, it can be said that the scintigraphy provides valuable information in the diagnostics of primary and metastatic bone tumours. This method permits more accurate assessment of the real size of the blastomatous process, and in this respect it exceeds the possibilities of the X-ray method of investigation. Without discarding the methods of clinical, laboratory and X-ray investigations used at present, the bone scintigraphy should become a compulsory link in the osseous blastomatous complex diagnostics.

Post-Text Assignments

I. Skim through the text and find its main idea. Discuss the method of detection of osseous tumours described.

II. Read the text closely and answer the following questions:

1. Why is the precise diagnosis of primary and metastatic malignant tumours of bones of basic importance? 2. When does the detection of trabecular bones metastasis become possible using the X-ray method? 3. What permitted the conduction of a number of metabolic investigations? 4. What investigations have been described in the text? 5. Whom were those investigations conducted by? 6. What were the scintigraphic findings compared with? 7. What phenomenon was established in the blastomatous process area scintigraphically? 8. What can you say about the difference between the X-ray and scintigraphic methods of investigation? 9. Which of the two methods is more reliable and why? Prove it. 10. What were the scintigraphic results confirmed by?

III. Pick out from the text the sentences proving the advantage of the new method and translate them.

IV. Translate the text under the title «Results and Discussions».

V. Make up a plan of the text.

VI. Read and translate the following text without using a dictionary. Entitle it:

Metastatic lesions in 18 femurs of 14 patients were managed by prophylactic intramedullary nailing. Eleven of the patients had carcinoma of the breast as the primary lesion. Indication for prophylactic nailing was presence of femoral lesions 2.5 cm in diameter which either involved the femoral cortex or were painful regardless of location in the bone.
Diffuse involvement of the bone, predicted survival time, elimination of pain after radiation therapy and inability to walk were not considered contraindication to operation.

Preoperative roentgenograms of the entire femur were obtained. Telerentgenograms were used to determine the length of the intramedullary rod — the distance from the superior distal margin of the neck to the upper pole of the patella. The greater trochanter and superior distal margin of the neck were exposed through a lateral incision. The intramedullary rod was advanced through a drill hole in an antegrade direction. Precraking the rod to conform to the anterior curvature of the femur is essential to avoid penetration of this anterior cortex by the nail. One large defect was exposed directly, curetted and filed with methyl methacrylate cement, and then the rod was advanced before the methacrylate hardened.

Eleven patients ambulated using walkers within four days of operation, two walked within two weeks, and one walked at 23 days. Survival after operation ranged from 38 to 1,309 days. Pain and hospitalizations were reduced, and over-all management made easier after prophylactic internal fixation.

VII. Discuss the following Case:

The patient, a sixty-six year old woman, was seen because of a mass in the right side of the neck and associated ulcerating pharyngeal lesion. Preoperative radiation therapy, 2,000 r, was followed by laryngopharyngectomy. Four months after surgery, pathologic fracture of the right humerus occurred when she fell at home. An intermedullary nail was inserted with relief of symptoms. One month later she was re-admitted because of mental confusion. She was transferred for terminal care and died one month later.

UNIT 4

Texts: 1. Treatment of Thyroid Malignancies.
      2. Management of Carcinoma of the Thyroid.
Word-Building Elements: Term-element «thyro-», the prefix re-.

Pre-Text Assignments

1. Learn the following terms:

Excision [ek'siʃən] вырезание, удаление
Surgical excision is the method of choice in many cases of cancer.
Intact [in'tækt] целый, неповрежденный
The lobe was excised but the vessels, nerves and muscles were left intact.
Lobectomy [lo'bektəmi] удаление доли органа или железы
Lobectomy is performed in cases of thyroid malignancies, lung cancer, etc.
Restrict [ris'trɪkt] ограничивать
The number of recurrences after operation has markedly been restricted.
Extirpation [,ekstəˈperɪpən] удаление, уничтожение
The early detection and radical extirpation of the neoplasm prevented the appearance of metastases.

II. Form new words adding the prefix re- and translate them:
Model: write — rewrite переписать
take, absorb, activation, appear, occur, current, arrange, assure, action, establish, admit.

III. Analyze the following terms. Memorize the meaning of the term-element "thyro"- щитовидная железа:
thyrocardiac, thyrocele, thyrogenic, thyrolaryngeal, thyrotilic, thyrotoxic, thyrotoxicosis, thyroidin.

IV. Match the following English word combinations with the Russian ones:
1. early detection 1. кроветворная система
2. total thyroidectomy 2. полное удаление щитовидной железы
3. radical extirpation 3. раннее выявление
4. inoperable cancer 4. хирургическое удаление
5. hematogenic system 5. неоперабельный рак

V. Translate the following sentences. Define the type of the Subordinate Clauses:
1. There are some cases when it is desirable to fumigate (оккуривать) a room or a house. 2. Formalin is one of the most effective fumigants, when properly used. 3. Fumigation is rarely used today because it is not always effective. 4. We know that most disease germs die quickly when they leave the body, and so we do not consider fumigation so important. 5. A culture medium is a prepared substance on which microorganisms will grow.

TREATMENT OF THYROID MALIGNANCIES

To-day, malignant tumours of the thyroid are treated by various methods. Besides excision by surgery, irradiation with X-rays and radium rays, as well as treatment with iodine and hormonal therapy are employed.

Surgical Treatment. The surgical methods for the removal of thyroid malignancies may vary, depending in every case on the histologic type of the tumour. According to CRILE, Mc NAMARA and HAZARD in papillary cancer it is necessary to excise the lobe infiltrated by the primary tumour, while the muscles, nerves and blood vessels are left intact. CHESTER claims that it is not decided yet whether total lobectomy or total thyroidectomy in papillary cancer should be the method of choice. When the neoplasm is present in both lobes, there is no doubt that total thyroidectomy is required. Owing to the frequent multicentricity of thyroid malignancies BLOCK, BRUSH and HORN recommended total or nearly total thyroidectomy. CZEYDA-POMMERSHEIN suggests that radical operation with lymph node extirpation should be performed when clinically diagnosed malignant tumour is present, and when histologic examination indicates that X-ray irradiation is an absolute ne-
cessity. SAWYER, BLOCK and BOWMAN have found that in papillary cancer even the restricted removal of the tumour itself may produce the desired result, but in such cases recurrences are more common, occurring in 42 per cent of their cases. Incomplete surgical intervention promotes the propagation of the tumour, therefore radical extirpation of the neoplasm and early surgical removal of the metastases is the aim. At the Mayo Clinic, BLACK, Ya DEAN and WOOLNER treated 885 malignant tumours of the thyroid and found that in papillary cancer total lobectomy and contralateral subtotal lobectomy are the methods of choice; moreover, the paraphracheal lymph nodes on the side of the tumour should be removed as a rule. Total thyroidectomy should be employed in case of the tumour can be demonstrated extensively in both lobes.

In follicular cancer total lobectomy or thyroidectomy should be performed, when the tumour has infiltrated the capsule. This procedure is recommended by the Mayo Clinic in possibly every case of follicular cancer. The lymph nodes should be removed only when they contain palpable tumour, but in follicular cancer metastasis to lymph nodes is uncommon. In solid cancer the surgical procedure is exactly the same as in papillary cancer.

In indiffereniated cancer CRILE and HAZARD, as well as CHESTER recommend the most radical surgical methods and suggest that total lymph node dissection should be performed, with extirpation of the veins and lymph nodes.

In inoperable cancer irradiation with X-rays or iodine treatment or both should be employed. Metastases to the cervical lymph nodes occur frequently. According to BLOCK, MILLER and BRUSH in about 30 per cent of the cervical dissection cases metastases to the lymph nodes could be demonstrated at a time they were not palpable yet. Therefore in the presence of metastases to cervical lymph nodes they recommend radical cervical dissection, while in the cases in which there are no palpable metastases to lymph nodes they suggest that a modified method of cervical dissection should be performed.

**X-RAY Irradiation.** Opinions vary as to the value of postoperative radiation therapy. So according to CRILE and HAZARD, as well as WELCH, CHESKY and HELWIG neither roentgen, nor iodine treatment are required following operation, while others definitely state that both should be employed (GRAHAM and Mc WHIRTER, HARE and SALZMAN, PATERSON).

JACOBSSON emphasizes that postoperative roentgen irradiation plays a very important role in the destruction of tumour tissue residues eventually present. According to him, the importance of this is proved also by the better survival statistics of the patients irradiated with X-rays.

The usefulness of irradiation is determined also by whether the tumour is sensitive or resistant to radiation. There are thyroid tumours which are sensitive to radiation, but others are resistant to it; in the latter cases practically nothing may be expected from irradiation. Poorly differentiated tumours are sensitive to radiation, therefore it is absolutely justified to irradiate them.
Hormonal Treatment. The administration of hormone is the third possibility in the treatment of malignant tumour of the thyroid gland. Hormonal treatment is indicated a) when the cancer is inoperable, b) as a prophylactic measure following surgical removal of the tumour and c) also prophylactically in such cases where a turning to malignancy may be anticipated.

Summary. Summing up the therapeutic measures which may be taken into consideration in the treatment of malignant tumours of the thyroid it may be stated that beside surgical removal irradiation with X-rays or radium, as well as treatment with iodine and hormone preparations are the methods of choice. The type of treatment to be employed depends to a great extent upon the histologic type of the tumour. In malignant adenoma lobectomy is indicated, without lymph node extirpation, but when the adenoma has infiltrated also the capsule, lobectomy and radical block dissection should be performed. In malignant papilloma radical operation should be carried out: total lobectomy on the ipsilateral and subtotal on the contralateral side, as well as ipsilateral block dissection are the methods of choice. In follicular cancer total lobectomy, or when the capsule is also infiltrated, thyroidectomy should be performed. Lymph node dissection is indicated only when palpable metastases are present. The treatment of carcinoma solidum is the same as that of follicular cancer.

Post-Text Assignments

I. skim through the text and find the key sentences.
II. Read the text closely and answer the following questions:
1. What kinds of treatment of thyroid malignancies do you know?
2. Which of those methods is more effective and why?
3. What do the surgical methods for the removal of thyroid tumours depend on?
4. In which cases only the lobe of the thyroid is excised?
5. When is total thyroidectomy required?
6. When should lymph node extirpation be performed?
7. What kind of surgical operation is performed in the case of follicular cancer?
8. What must one do in case of solid cancer?

III. Entitle paragraphs 3, 4 and 5 using the key sentences:

IV. Find in the text the English equivalents of the following Russian word combinations and translate the sentences containing them:

лимфатические узлы, частичное удаление доли, наиболее радикальный метод, исчечение опухоли, полное удаление, неоперабельная опухоль, послеоперационное лечение, чувствительный к радиации, рентгенотерапия.

V. Write ten compound medical terms out of the text and analyze them.
VI. Translate the Summary of the text. Put five questions to it.
VII. Make up a plan of the text.
VIII. Read and translate the following text. Discuss the subject of the article. Entitle it:

As a pathologic entity, carcinoma of the thyroid has been the subject of controversies for many years. With more precise histopathologic clas-
sification and the recognition of the influence of age and sex, among other factors, on the clinical and biologic characteristics of carcinoma of the thyroid, as emphasized by Eisenberg and Franssila it is now clear that these neoplasms comprise some of the slowest growing tumours as well as some of the most virulent malignant neoplasms, with a large intermediate group, composed primarily of the follicular, mixed papillary-follicular and medullary varieties, as reported by Eisenberg, Franssila and co-workers.

According to Eisenberg, survival rates for the papillary and follicular varieties have shown significant increases in recent decades.

The recent influx of radiation associated tumours of the thyroid which has equalized the incidence of these neoplasms in the two sexes, poses a new set of questions regarding the disease of these tumours, their biological nature, clinical behaviour, detection and treatment, prognosis, especially in males.

With autotransplantation of the parathyroids, the incidence in our series of permanent hypoparathyroidism in the last 54 consecutive total thyroidectomies was reduced to zero. We believe that the application of autotransplantation of the parathyroids constitutes a major technical and physiologic improvement in operations on the thyroid. It can be used by any surgeon who has sufficient experience to identify and dissect the parathyroid glands.

IX. Read, translate and discuss:

MANAGEMENT OF CARCINOMA OF THE THYROID

The current management of cancer of the thyroid is reviewed. The actual incidence of thyroid nodules is high, with 3 per cent of the population found to have multiple nodules and one per cent believed to have nodules. The autopsy percentage in some series is much higher, with 45 to 50 per cent of the population having multiple nodules, and 10 to 12 per cent having single nodules. Recently, efforts have been directed to refinement in the selection of patients for operation of thyroid nodules. Ultrasound and aspiration of cystic lesions can be rewarding but have limitations. Diagnostic needle biopsy is of some help in confirming benign lesions, but is subject to significant error in the recognition of carcinoma. In recent years a swing toward conservatism has developed with emphasis on fitting the operation to the individual patient's carcinoma.

Recognition of carcinoma of the thyroid occurs after the appearance of a palpable nodule in the thyroid or a palpable cervical lymph node containing metastatic disease. Thyroid lobectomy is the minimal operative procedure indicated for a single, suspicious nodule in one lobe. Most surgeons initially perform a total lobectomy for suspicious thyroid nodules because frozen section study may not be available or may fail to identify a low grade carcinoma, because the local recurrence rate and mortality are excessive if partial lobectomy alone is used and, lastly, because if less than a total lobectomy is done, reoperation when needed is associated with an increased morbidity. Contralateral, partial and
total lobectomy is occasionally indicated depending upon the pathologic variety and distribution of the carcinoma of the thyroid.

Total thyroidectomy is advisable when multicentricity is demonstrated histologically or when gross evidence at the time of operation reveals a nodule in the contralateral lobe of the thyroid, again suspicious of carcinoma. Other indications for total thyroidectomy include a history of previous external radiation therapy to the neck because of the high frequency of multicentricity. Total thyroidectomy is also recommended in familial medullary carcinoma of the thyroid because it is uniformly bilateral and multicentric and it is advisable in invasive follicular carcinoma to facilitate treatment of metastases with radiation.

Palpable abnormal lymph nodes found in a patient with carcinoma of the thyroid should be removed. Experience has demonstrated the effectiveness of modified, rather than classical, lateral neck dissections for carcinomas of the thyroid. Lateral cervical lymph node dissections are modified by preservation of the sternocleidomastoid muscle for cosmetic purposes and the eleventh cranial nerve for functional purposes.

Thyroid hormone therapy is usually instituted after operation for carcinoma of the thyroid and should be continued indefinitely to eliminate any stimulus of residual thyroid tissue by thyroid stimulating hormones. External radiation therapy provides varying degrees of palliation with well differentiated types responding best. Chemotherapeutic agents, on the other hand, have not been of distinct value to date in the management of inoperable cancer of the thyroid.

UNIT 5

| 2. Summary.  
| Word-Building Elements: Term-element «lymph».

Pre-Text Assignments

1. Learn the following words and word combinations:

**Breast [brest]** молочная железа
Female breast tumours are the problem of extensive research of oncologists.

**X-ray detection** выявление с помощью рентгеноскопии
One of the most reliable methods being X-ray detection of cancer, physicians use it more and more in clinical practice.

**Determination [dɪ,təˈmɛntʃən]** определение, установление
The determination of the malignant nature of tumours is facing many difficulties.

**Nipple [ˈnɪpl]** сосок молочной железы
In many cases of cancer the nipple is firm and tender.

**Lactiferous duct** [ˈlæk.tɪfərəs dʌkt] выводной проток молочной железы
In mammary cancer metastases may involve the lactiferous ducts, too.

128
II. Analyze the structure of the following terms:
lymphadenoid, lymphangioma, lymphangitis, lymphoduct, lymphoditis, lymphoblast, lymphocyst, lympholeukocyte, lymphovascular.

III. Match the following English word combinations with the Russian ones:

1. tumour detection 1. доброкачественная опухоль
2. pectoral fascia 2. прилегающая ткань
3. bening tumour 3. грудная фасция
4. subareolar region 4. выявление опухоли
5. adjacent tissue 5. околососковый кружок

IV. Translate the following sentences. Define the functions of the Gerund in the sentences:

Pattern: Before entering the room the doctor washed his hands with soap under hot running water. (Adverbial Modifier)
Прежде чем войти в комнату, врач помыл руки с мылом под горячей проточной водой.

1. Before giving first aid doctor felt the patient’s pulse. 2. The physician’s first and essential duty in overcoming infectious diseases is making prompt and accurate diagnosis. 3. Learn the ABC of science before attempting to ascend its heights. 4. One of the most important factors in keeping the rash is the constant scratching and rubbing. 5. They attempted reducing the fracture and obtaining approximation without surgical intervention.

X-RAY DIAGNOSTICS OF MAMMARY TUMOURS

The X-ray diagnosis of female breast tumours is recognized as a valuable clinical method of investigation. Tumour detection by the routine clinical methods is achieved in 70%, whilst by roentgenography, the percentage rises to 95 per cent.

Yet, whilst X-ray detection of the tumour nucleus in the breast is comparatively easy, the determination of the nature of the tumours process is still facing considerable difficulties. The differentiation of the benign from malignant nature of the neoplastic growth is based on the form, outlines and intensity of the tumour nucleus shadow, on its relation with adjacent tissues and their structural changes, the presence and the type of calcifications, the state of the nipple and the skin infiltrations. Nevertheless, the differentiation of the scirrhous cancer from the indurative post-inflammatory foci of fibroadenomas, for example, the medullary cancer from fibroadenomas, the cysts from adenomas and other similar conditions is still very difficult.

Breast cancer originates from the epithelium of the small or bigger lactiferous ducts or the acini. Tumour nucleus can be roentgenographically visualized when it reaches 1—1.5 cm in size. Its diffusion occurs by invading of neighbouring lymph spaces and by the route of the lymphatic network flow, by the pericanalicular lymph spaces towards the nipple and the lymphatic network under the areola or backwards via the lymphatic vessels running to the lymphatic network of the deep pectoral
fascia and therefrom to the deep lymphatic vessels and lymph nodes in the axilla, subclavicular space and retrosternal pathways. Finally, the spread of cancer lymphangitis can be achieved onwards to the mammary surface by the interstitial routes up to the subcutaneous lymphatic network forming the so-called «skin as orange peel».

Roentgenographically, the infiltration of the adjacent spaces presents uneven tumour shadow outlines, the so-called «pedicles» which sometimes appear as spicules. In the direction of the tumorous tissue invasion towards the lymphatic space, these pedicles can take different shapes, but as a rule, they are directed along the course of the lymphatic return flow.

In 17 out of 73 cases with «mammary» tumour, positive signs of cancer lymphangitis were observed. From them 17 were surgically verified as cancer, 6 were in advanced stage of cancer with apparent clinical manifestations and were subjected to irradiation and hormonal treatment and 4 have been accepted clinically as cancer and were subjected to preliminary irradiation therapy.

Roentgenologically, according to the ways of spread, the cancer lymphangitis disclosed the following images:

The cancer tissue is spreading in the form of «proboscis» along the course of the convergent lactiferous ducts, infiltrating the pericanalicular lymph spaces and tightening unevenly the fan-shaped converging lactiferous duct lines. The infiltrate reaches the subareolar region and after thickening it, initiates the retraction of the nipple. The so-called «cancer bridge» between the tumour shadow and the nipple is thus formed.

The second route is the infiltrate propagation by the interstice lymphatic vessels to the surface of the breast and skin. Reticuloradial overshadowings originated towards the surface are found, which after reaching the subcutaneous tissues, densify and enlarge the skin shadow. Roentgenologically, the cancer infiltration of the subcutaneous lymphatic network becomes apparent much earlier and in much slighter subcutaneous infiltration than the clinical manifestations of the so-called «orange peel».

Finally, the infiltrating pedicles can be directed towards the fascial lymphatic network of the pectoral muscle. These routes are hardly discernible on the roentgenograms as the breast parenchyma posterior surface and the bright strip between it and the pectoral muscle should be visible.

The infiltrate might follow two or more of these routes or in case of abnormal lymph flow deviation as a result of the infiltrated routes, to propagate in the new lymph flow direction. In this way, variably directed «tails» of the main nucleus are formed, indicating the route of the new lymph flow. The absence of infiltrative lymphangitis around the nucleus by no means excludes its malignant nature. Sometimes, quite large tumour shadow with regularly round form and smooth contours appear to be cancerous, especially, in the medullar cancer form. On the contrary, inflammatory breast processes or surgical breast interventions may reveal compact nucleus with uneve outlines and «pedicles» resembling scirrhous cancer emerging from it.
Post-Text Assignments

I. Read and translate the text.

II. Read the first paragraph of the text once again and say which method is more reliable, routine clinical methods or roentgenography? Why?

III. Read the second paragraph closely and speak about the difficulties in determining the nature of the breast tumour.

IV. Read the third paragraph of the text closely and describe the diffusion of the breast cancer through the lymph spaces to the lymphatic vessels.

V. Read the fourth and fifth paragraphs of the text attentively and find the key sentences. Write them out.

VI. Read the sixth paragraph of the text and explain the formation of «cancer bridge» between the tumour shadow and the nipple.

VII. Read the following Summary and define the main idea of the experiment described.

SUMMARY

In-vitro studies of breast cancer tissues from a hundred and thirty patients demonstrated testosterone dependence in fourteen women, of whom thirteen were postmenopausal. Six could have been conditioned by prior androgen therapy. Anti-androgen measures were successful in six of eight patients, and adrenalectomy may be the best treatment of testosterone-dependent breast cancer. In two other patients estrogen treatment failed because estradiol and testosterone are not always antagonists.

SECTION VI
PHARMACOLOGY

UNIT 1

Texts: 1. The Scope of Pharmacology.
2. Prostaglandin Infusion in Treating Nonocclusive Mesenteric Ischemia.
Word-Building Elements: Term-element <pharm>-, the prefix over-.

Pre-Text Assignments

I. Learn the following words and word combinations:

Scope [skoup] сфера деятельности, предмет изучения
The scope of surgery is operative treatment of physical injuries and tumours.

Poisonous effect отравляющее действие
The overdosage of some drugs may have poisonous effect on the organism.

Alleviate [əˈliːviət] облегчать, смягчать (боль)
Drugs are used to alleviate pain and tenderness.

Preservation [,prezəˈveɪʃn] сохранение, консервирование
The period of preservation of blood depends on many factors.
Dispense [dɪsˈpens] готовить (лекарства)
The pharmacist's duty is to dispense drugs. He is responsible in properly dispensing the preparations in finished forms.

II. Form new words adding the prefix over-. Define the part of speech and translate:
Model: dosage — overdosage передозировка
use, come, crowding, eating, weight, do, drink, sleep, work, handling.

III. Analyze the structure of the following terms:
pharmacal, pharmaceutical, pharmaceutist, pharmacist, pharmacognosy, pharmacology, pharmacologist, pharmacopeia, pharmaceuticals, pharmacy.

IV. Match the following English word combinations with the Russian ones:

1. poisonous effect 1. инородное тело
2. sterile solution 2. стерильный раствор
3. foreign substance 3. прикладная наука
4. applied science 4. жидккий препарат
5. liquid preparation 5. отправляющее действие

V. Find substitutes for the following word combinations:

1. a substance producing injury to an organism by its chemical action 1. poison
2. the study of poisons 2. posology
3. the science of dosage 3. toxicology
4. the study of drugs 4. pharmacology
5. the study of drug action on the living organism 5. pharmacodynamics

THE SCOPE OF PHARMACOLOGY

Pharmacology may be defined most simply as the study of drugs. In the broadest sense it includes all the scientific knowledge of drugs, such as the name, source, physical and chemical properties, and the mixing or preparing of drugs in the form of medicine. It is concerned also with physiological actions of drugs — their absorption, action, and fate in the body — and with their therapeutic uses, as well as the poisonous effects that result from overdosage.

A drug is a chemical substance that affects living protoplasm and does not act as a food. It is used in the cure, treatment, or prevention of disease in man or animals. In addition, drugs alleviate suffering and pain.

The subject of pharmacology may be divided into a number of distinct sciences such as pharmacognosy, pharmacy, posology, pharmacodynamics, pharmacotherapeutics, and toxicology.

Pharmacognosy is a descriptive science and is concerned with the recognition, quality, purity by macroscopic and microscopic means, and identification of plants and animal drugs.
Pharmacy deals with the preparation, stability, preservation, and storage of drugs. From these drugs the pharmacist prepares compounds, and dispenses medicines. Most drugs are prepared by pharmaceutical manufacturers and are distributed to the pharmacy or hospital in such suitable dosage forms as tablets, capsules, liquid preparations, or sterile solutions for injection. The pharmacist now has no less a responsible role in properly dispensing the preparations in finished forms than when he powdered, dissolved, mixed, and otherwise compounded prescriptions. He still performs these functions for many of these orders.

Posology is concerned with the dosage or amount of a drug given in the treatment of disease. There is a minimum, maximum, usual or therapeutic, and toxic dose for each drug. The most important is the usual dose, which is the oral dose for an adult weighing 70 kg. There are a number of conditions that modify the dose of a drug.

Pharmacodynamics is concerned with the response of living tissues to chemical stimuli, that is, the action of drugs on the living organism in the absence of disease. It is one of the newest biological sciences and is closely associated with physiology, biochemistry, pathology, and microbiology. It is unique in that its interest is focused on drugs. It is a study of the absorption, fate, excretion, and action of a foreign substance in the body.

PURPOSE OF PHARMACOLOGY.

The purpose of pharmacology as a pure science is to determine the response of living tissues to chemical stimuli, chiefly drugs or prospective drugs on living tissues of the body in the absence of disease, as, for example, in inducing sleep or exciting to retard sleep. It also attempts to correlate chemical structure with response and to classify chemically related drugs into groups such as the barbiturates and the sulfonamides.

As an applied or practical science, it has the following functions: 1) to test drugs quantitatively and standardize them so that they are available to the doctor and patient in a uniform and dependable form; 2) to determine how drugs produce their effects on the animal body; and 3) to develop new drugs.

Post-Text Assignments

1. Read the text closely and answer the following questions:

11. Speak shortly about the subject of pharmacology and a number of sciences it may be divided into.
III. Read the text under the title «Purpose of Pharmacology» and speak about the purpose and functions of pharmacology.

IV. Read, translate and discuss the following text. Write out all compound medical terms and learn them:

**PROSTAGLANDIN INFUSION IN TREATING NONOCCLUSIVE MESENTERIC ISCHEMIA**

Arterial infusion of prostaglandin E₁ might be an effective therapy for nonocclusive mesenteric ischemia, a preliminary study suggests.

Five minute prostaglandin infusions reserved mesenteric arterial vasospasm experimentally induced in dogs by digoxin or hemorrhage, according to investigators at M. D. ANDERSON Hospital, Houston.

Prostaglandin E₁ would seem to be an ideal vasodilating agent for elderly, acutely ill patients, radiology resident L. John DAVIS, M. D. told the American Roentgen Ray Society meeting in San Francisco. It has potent, rapid action, and is quickly cleared from the liver and lungs.

Digitalis preparations are potent vasoconstrictors in the mesenteric circulation. Many cases of ischemia occur in situations in which digitalis is used, such as myocardial infarction, congestive heart failure, or cardiac arrhythmias.

Nonocclusive mesenteric ischemia often ends fatally, since no therapy is available. (The major vessels are not blocked, so surgery cannot help).

Recent reports indicate, however, that vasodilating agents may reverse mesenteric vasospasm and improve survival changes. Some of these are tolazaine, papaverine, and phenoxylenzamine.

Prostaglandin E₁ increased superior mesenteric arterial blood flow an average of 228% in ten mongrel dogs after experimental hemorrhage had reduced such flow by an average of 45% and after infused digoxin decreased it by 26%.

Major arterial branches narrowed and peripheral-branch falling decreased following digoxin infusion and hemorrhage.

Prostaglandin infusions caused no significant rise in heart rate following experimental hemorrhage, but did produce a statistically significant drop in systemic arterial blood pressure following both hemorrhage and digoxin infusions.

Other studies indicate that intramesenteric use of prostaglandin E₁ produces relatively fewer systemic hemodynamic changes than other vasodilators, and that good local vasodilation can be obtained with very low doses.

V. Read, translate and retell the following text:

**MEDICINES UNDER CONTROL**

The 1940s saw a breakthrough in the field of pharmacology with the development of antibiotics, sulfonamides and hormonal preparations. They saved the lives of millions of people by curing diseases formerly believed incurable, and people put their trust in these new allies. Then the world was shaken by the news of an apparently innocuous sedative
called thalidomide, which caused the birth of thousands of cripples. The unchecked growth of the drug industry now became suspect in people’s eyes. The problems of exercising control over medicines, of ensuring their reliability and harmlessness became the concern of the general public. An all-embracing state system of control over medicines operates in the Soviet Union. As soon as a new drug is developed at any of the several dozen research establishments engaged in this area the system is «switched on». Were they given a free hand, the chemists could probably flood us with new medicinal compounds, and some of them would be very effective, too. But the author’s imagination is curbed by the first demand placed on all drugs — harmlessness, complete and lasting. The second important demand is effectiveness. And in our country yet another demand must be satisfied — advantage. The authors of the new drug must prove that their brainchild is better and more effective than all the others already in the use. We believe that this last demand is also very important, for it ensures that only the best preparations make their way into the chemist’s shops and helps prevent doctors losing their bearings among a multitude of drugs of approximately the same action.

Well, let us say the drug has been thoroughly investigated within the laboratory that developed it and has been successfully tested on experimental animals. It is then examined by a panel of specialists in biology, chemistry, toxicology, genetics, biochemistry, pharmacology, etc. They are concerned not only with its immediate effect, but also with its side-effects and long-term after-effects and influences. Will a heart drug affect the kidneys or some other organ? Does it lead to an allergic reaction? Is it really superior to all other known drugs?

Obviously, only a really excellent drug can make its way through all these barriers. Now, after undergoing a thorough investigation laid down in the instructions, the drug is ready for clinical tests. The decision to make it available for such tests is in the competence of one body only — the Pharmacological Committee of the USSR Ministry of Health. All this work is carried out in the Soviet Union in strict accordance with health protection legislation. This procedure is not accepted in all countries, however. In the United States, for instance, the drug is tested and approved by the firm that has developed it. Then the documentation is sent to the governmental Food and Drug Administration, which either turns it down or... says nothing. The silence in fact gives the firm the right to proceed with the clinical tests.

After the drug testing methods have been approved, recommendations are reported to the USSR Minister of Health, who alone has authority to give the permission for the drug to be produced and used for treatment. The drug is launched on the next stage in its life only after an appropriate order has been issued by the Minister and it has been duly registered.
UNIT 2

2. Streptomycin.
Word-Building Elements: Suffix -ly.

Pre-Text Assignment

I. Learn the following words and word combinations:

**Introduce** [ˌɪntrəˈdjuːs] вводить
The surgeon cleansed the wound and *introduced* antibiotics into it.

**Mold** [maʊld] плесянь, мок
A. Fleming found Penicillin in the *mold* Penicillium notatum.

**Extraction** [ɪkˈstrækʃn] извлечение
The extraction of Penicillin from Penicillium notatum revolutionized medicine.

**Susceptible** [ˈsəsɛptəbl] чувствительный, воспринимчивый
**Carbohydrate metabolism** обмен углеводов
Streptomycin interferes with carbohydrate metabolism in the susceptible organisms.

**Sensitive** [ˈsɛnsətɪv] чувствительный
If the patient is sensitive to penicillin another drug must be used. Penicillin O is used in cases when patients are sensitive to penicillin G.

II. Form adverbs from the following adjectives, adding the suffix -ly and translate them:

**Model:** local — *locally* местно, в определенном месте
probable, comfortable, different, chief, severe, casual, legal, official, sufficient, late, hard, recent, extreme, quick, bad, lone.

III. Analyze the structure of the following terms:

antibiotic, penicillin, contamination, moisture, refrigeration, biosynthetically, streptomycin, susceptible.

IV. Match the following English word combinations with the Russian ones:

1. bacterial growth 1. антибактериальное действи
2. antibacterial action 2. обмен углеводов
3. liquid media 3. коммерческие препараты
4. commercial preparations 4. рост бактерий
5. carbohydrate metabolism 5. жидкая среда

V. Read and translate the following sentences. Pick out the Adverbial clauses of reason:

**Pattern:** Since you are healthy now, you may begin your morning exercises again.
Поскольку вы теперь здоровы, можете снова начать утреннюю гимнастику.
1. As the home treatment was uneffective, the doctor decided to hospitalize the patient. 2. As penicillin is effective in treating inflammations, it is widely used for injections. 3. When the acute symptoms subsided, weakened muscles began to gain new strength. 4. Since the operation was performed safely, the surgeon is confident that the patient will recover quickly. 5. The surgeon postponed the operation, because the patient was very weak. 6. Whenever it is possible, sulfonamides should be used. 7. One disadvantage of streptomycin is that tubercle bacilli may become resistant to it.

**PENICILLIN**

The first antibiotic discovered and introduced into medicine was penicillin. Alexander Fleming observed in London, in 1928, the absence of bacterial growth near a contaminating mold (fungus) colony on one of his culture plates. As the mold was Penicillium notatum, he named the substance it secreted penicillin. The mold was grown in broth which then was found to possess antibacterial action against many common pathological organisms both in vitro (in the test tube) and in vivo (in the animal body). Much was learned about penicillin during the next few years. The early preparations extracted from the broth culture were grayish-brown, amorphous powders. Now, pure crystals of penicillin free from contaminating material are available for clinical use.

Penicillin is prepared by the extraction of cultures of the mold grown in special liquid media. At first all the penicillin available was obtained from subcultures of Dr. Fleming’s strain, which was grown in broth by the surface-culture method. Commercial preparations today are obtained generally by growing in corn-steep liquor a strain of *P. chrysogenum* developed from a mold found on a cantaloupe in Peoria, Illinois. By this method much larger yields of penicillin are obtained more rapidly and much less expensively.

The various forms of penicillin so far isolated are designated as F, G, K, O, V, and X. They are closely related chemically but differ in their antibacterial effects in the body. The penicillins are white crystalline acids which lose their activity slowly in solution or in the presence of moisture. Penicillin G (benzyl penicillin), which is easily manufactured and is most generally effective, is available as either the potassium or sodium salt. The dry crystalline salts are stable without refrigeration for long periods of time. Once in solution, the drug is not stable and must be refrigerated. Buffered solutions of penicillin G are more stable than the unbuffered ones and may be kept for seven days.

By the addition of intermediates to media or by subjecting the cultures to X-rays, mutants have been obtained which have increased the yield of penicillin 60 to 100 per cent. Penicillin O is obtained by growing the mold in a medium containing allylmereaptopoetic acid. This antibiotic is useful in cases where patients are sensitive to penicillin G. The 2-chloroprocaine salt of penicillin O is the insoluble depot form. Phenoxyemethylic penicillin (penicillin V) is produced biosynthetically by *P. chrysogenum* Q 176 in a special culture medium.
Post-Text Assignments

I. Skim through the text and choose the key sentences of each paragraph.

II. Read the text closely and answer the following questions:

1. When and by whom was penicillin discovered? 2. Why did A. Fleming name the new substance penicillin? 3. How did A. Fleming notice the antibacterial action of penicillin? 4. In what forms is penicillin available nowadays? 5. How are the commercial preparations of penicillin obtained today?

III. Find in the text information about various forms of penicillin and their antibacterial effects in the body. Discuss the information.

IV. Read the following text closely and discuss the action of streptomycin in the body.

STREPTOMYCIN

Streptomycin is a purified antibiotic principle produced by certain strains of Streptomyces griseus when grown on certain media. It is a white crystalline substance which may be prepared as several salts, including the hydrochloride, the sulfate, and the calcium chloride-complex double salt.

Streptomycin is active against a variety of gram-negative organisms, including Escherichia coli, Pseudomonas aeruginosa, Pasteurella tularensis and pertussis Hemophilus influenzae, Salmonella typhi, and the Brucella species. It is active also against a few gram-positive organisms and the tubercle bacillus. The tubercle bacillus and other streptomycin-sensitive organisms develop very rapidly a resistance to this drug; therefore careful bacteriological studies should be made before and during treatment with streptomycin to ascertain that the organisms are still sensitive to the drug.

Mechanism of Action. Streptomycin interferes with the carbohydrate metabolism in the susceptible organisms. It prevents the formation of oxalacetic acid from pyruvic acid.

Absorption, Distribution, and Excretion. Streptomycin is poorly absorbed from the gastrointestinal tract, and most of the drug administered orally is excreted in the feces. Therefore oral administration is of no value in systemic infections; however, it is useful in preparing surgical patients for operations on the large intestine where it is desirable to reduce the number of organisms present. Streptomycin is readily absorbed from intramuscular administration and is well distributed in the body fluids except the spinal fluid. Maximum blood levels are obtained in one to two hours and usually remain fairly steady for four hours with a gradual falling off in the next eight hours. Forty to 80 per cent of the total dose is excreted in the urine in 24 hours. Small amounts are eliminated in the bile, milk, sweat, and tears.

Toxicity. When streptomycin is given for a few days, the toxic effects are negligible. However, with prolonged administration, numerous toxic reactions occur. The most serious symptoms are those related to the involvement by the vestibular and sometimes the cochlear branch of the eighth cranial nerve. These include dizziness, ringing in the ears, disturbances in equilibrium, and diminished auditory acuity. Deafness
may result. Other toxic symptoms include severe headache, anorexia, nausea, abdominal pain, skin rash, fever, and pain at the site of injection.

**Therapeutic Uses.** The most important use for streptomycin is in the treatment of tuberculosis. It is also employed in the treatment of tularemia and brucellosis, and in bacteremias, meningitis, endocarditis, pneumonias, and intestinal infections caused by organisms that are streptomycin-susceptible, infantile gastroenteritis, and it is useful in treating urinary tract infections when the organisms are penicillin and sulfonamide resistant. Development of resistance on the part of the organism is a serious limiting factor in the use of this drug, and its administration should be limited to the treatment of infections produced by bacteria which have been shown by laboratory tests to be susceptible to it.

**Dosage and Methods of Administration.** For nontuberculous systemic infections streptomycin is administered intramuscularly, and the dose is determined by the susceptibility of the organism and the severity of infection. In acute infections 1 to 2 Gm daily are given intramuscularly in divided doses every six hours. In less severe infections 0.5 to 1 Gm daily may be adequate. Intravenous administration is rarely used because of the danger of the severe fall in blood pressure.

V. Read, translate and retell the following text. Entitle it:

Unfortunately, Streptomycin is more toxic than the other antibiotics, and those effects are naturally more likely when it is used over a long period, as in the case of tuberculous meningitis and miliary tuberculosis. It may account for persistent low fever and give rise to skin rashes, but its most injurious effect is on the nervous system, where it may damage the vestibular mechanism, interfere with vision and lead to considerable mental impairment. During recovery from tuberculous meningitis, it is difficult to decide whether damage to the nervous system is a legacy of the disease or a result of treatment. The intrathecal administration of Streptomycin gives rise to a cell reaction and increase of protein in the cerebrospinal fluid, which may take several weeks to subside after treatment has been stopped. When used for infections other than tuberculosis, Streptomycin can as a rule be discontinued after a week.

VI. Make up a plan of the reading material.

VII. Write a summary of the reading material.

---

**UNIT 3**

| Texts: | 1. The Sulfonamides.  
| 2. Toxicity of Sulfonamides. |
| Word-Building Elements: | The prefix dis- |
| Grammar: | The Gerund as an Adverbial Modifier. |

**Pre-Text Assignments**

1. Learn the following words:

   **Toxicity** [tɒˈsɪsɪtɪ] токсичность, ядовитость

   In some cases of bacterial invasion the introduction of sulfonamides leads to decreased toxicity.
Pervade [pərˈvaid] пропитывать
The drug is able to pervade all intercellular spaces in the various tissues and organs.

Inhibit [ɪnˈhɪbɪt] тормозить, задерживать
Sulfonamides act directly on bacteria and inhibit their growth.

Retain [rɪˈteɪn] удерживать, сдерживать
When a patient can not retain the drug by mouth it is administered intravenously.

Lotion [ˈləʊʃn] примочка
Lotions with sulfonamides have been disappointed in the treatment of wound infections.

II. Form new words adding the prefix dis-. Define the part of speech and translate:

Model: function — disfunction функциональное нарушение
comfort, place, ability, miss, infection, infectant, continue, connect, order, section.

III. Analyze the structure of the following terms:
sulfamethoxypridazine, gastrointestinal, sulfamerazine, sulfadiazine, reticuloendothelial, genitourinary.

IV. Match the following English word combinations with the Russian ones:
1. bacterial septicemia 1. плохо поглощенный
2. intercellular space 2. длительное воздействие
3. decreased toxicity 3. сепсис, вызванный бактериями
4. prolonged action 4. межклеточное пространство
5. poorly absorbed 5. пониженная токсичность

V. Translate the following sentences. Pay attention to the functions of the Gerund:

Pattern: In reading much scientific literature you deepen your knowledge of medicine. (Adverbial modifier)

Читая много научной литературы, вы углубляете свои знания по медицине.

1. Searching for ways to save wounded limbs, Pirogov arrived at the idea of the rigid plaster cast. 2. Pirogov was the first to use ether in removing cancer of the mammary gland. 3. The most constant early symptoms of rickets are sweating of the head, beading of the ribs, constipation. 4. A significant history often yields information which aids the doctor in deciding upon the appropriate type of therapy. 5. Important in eliciting a history of trauma is the existence of mental symptoms such as momentary loss of consciousness, etc. 6. The patient was admitted to the hospital because of swelling of the abdomen. 7. After making a diagnosis the doctor prescribed the patient penicillin therapy.

THE SULFONAMIDES

With the introduction of these drugs new advantages in the treatment of many bacterial septicemias have been attained. In some cases increased antibacterial activity, better diffusion into the cerebrospi-
nal fluid, or decreased toxicity occurs. Recent research activity has developed three new sulfonamides (sulfaphenazole, sulfadimethoxine, and sulfamethoxypyridazine) which have the additional advantages of greater potency (smaller dose) and a more prolonged action in the body. Therapeutic levels may be maintained by administering these drugs every 24 hours.

**Absorption, Distribution and Excretion.** The degree and rate of absorption of the sulfonamides from the gastrointestinal tract are variable. Some are rapidly and almost completely absorbed (sulfanilamide and sulfathiazole), some are more slowly and less completely absorbed (sulfamerazine and sulfadiazine), while others are so poorly absorbed (phthalylsulfathiazole and succinylsulfathiazole) that they are used for their local antiseptic effect in the intestinal tract.

After absorption, the sulfonamides are partially and temporarily bound in the plasma protein. The bound sulfonamide is inactive but is released slowly and becomes free drug in the plasma. It is then able to leave the blood stream and pervade all intercellular spaces in the various tissues and organs.

**Mechanism of Action.** The sulfonamides are bacteriostatic in therapeutic concentrations. They act directly on susceptible bacteria and inhibit their growth and multiplication and reduce their production of toxic substances. After the organisms are weakened or attenuated, the white blood cells and the reticuloendothelial system eventually eradicate the infection. The sulfonamides thus require the cooperation of the host in eliminating the infection. In high concentrations, as occur in the urine, the sulfonamides may become bactericidal; they may kill bacteria without this cooperation.

**Bacterial Resistance to Sulfonamides.** As a result of repeated exposure to sulfonamides, some of the organisms become resistant to them; hence it is important to provide as quickly as possible an adequate concentration of the drug to prevent further multiplication of the organisms present. The bacteria may develop alternate pathways for their own biochemical processes and thus become capable of living and of multiplying in the presence of the sulfonamides. Other resistant variants may actually grow better in the presence of these drugs. Although the antibiotics have replaced the sulfonamides in many infectious diseases, the latter are still widely used either alone or in combination with the antibiotics. Their lower cost and convenience of use largely account for their continued use.

**Therapeutic Uses.** The sulfonamides are effective in many types of infections. The most important uses today are:

1. Genitourinary infections with gram-negative organisms. The sulfonamides are widely used in bacterial infections of the urinary tract. They are valuable in many cases of infection with species of Proteus and Pseudomonas.
2. Upper respiratory tract infections such as tonsillitis, pharyngitis, pneumonia, and bronchitis. Sulfadimethoxine is a very effective drug.
3. Ulcerative colitis, bacillary dysentery, and preoperatively and postoperatively to surgery of the intestinal tract.
**Dosage and Method of Administration.** The sulfonamides are generally administered orally. For the adult, a large initial dose of 4 Gm is given orally, followed by 1 Gm every four hours. This dosage is continued for 72 hours after the temperature and pulse rate are normal. In critically ill patients, where it is desirable to obtain a therapeutic level quickly, or where patients cannot retain the drug by mouth, 5 per cent solutions of the sodium salts are administered intravenously.

Local application of the crystalline sulfonamides and sulfonamide ointments, creams, and lotions has been disappointed in the treatment of wound infections of the skin and mucous membranes. They are not recommended in the treatment of burns and superficial infections.

**Post-Text Assignments**

I. Skim through the text and define its main idea.

II. Read the text closely and answer the following questions:

1. What new advantages in the treatment have been attained with the introduction of sulfonamides? 2. What three new sulfonamides have been developed? 3. Which types of sulfonamides are used for their antiseptic effect in the intestinal tract? 4. Which types of sulfonamides are slowly absorbed? 5. How do the sulfonamides behave after absorption? 6. What is the bound sulfonamide able to pervade?

III. Speak about mechanism of action of sulfonamides.

IV. Read and translate the part of the text dealing with the bacterial resistance to sulfonamide. Make up five questions covering its context.

V. Speak shortly about the therapeutic use of sulfonamides.

VI. Read, translate and retell the following text:

**TOXICITY OF SULFONAMIDES**

Mild toxic symptoms include lassitude, anorexia, and cyanosis. More important are: vomiting due to sulfonamide gastritis, haematuria leading ultimately to suppression of urine, and rashes. When vomiting with each dose, the administration of the drug by mouth will have to be entirely stopped, and it should also be discontinued on the appearance of blood in the urine, or of a rash. Haematuria is caused by the deposit of crystals of the drug in the kidneys and urinary passages, and in order to prevent this it is important to maintain a high fluid intake during sulfonamide treatment. The rash is, as a rule, morbilliform or scarlati-niform; but an eruption indistinguishable from erythema nodosum may occur. Acute haemolytic anaemia and agranulocytosis are, though fortunately rare, grave complications.

The drug should not be given in the presence of severe anaemia or leukopenia. Foods, such as eggs, that contain sulphur, sulphur containing drugs, and saline cathartic should be avoided for as long as sulfonamides are being given, because they increase the likelihood of cyanosis due to sulphhemoglobinemia. It is advantageous to prescribe small doses of alkali with the sulfonamides.
UNIT 4

Texts: 1. Drugs Used in the Treatment of Tuberculosis.
2. The Tuberculin Test.
Grammar: Objective with the Infinitive.

Pre-Text Assignments

1. Learn the following words and word combinations:

Miliary ['miːlɪəri] просовидный
Miliary tubercles or lesions are present in miliary tuberculosis of the lungs.

Scatter ['skætə] рассеиваться, распространяться
The lesions are scattered throughout the body.

Tubercle bacillus туберкулезная палочка
Tubercle bacillus was discovered by R. Koch in 1882.

Waxy coating восковидный налет
Waxy coating covered the patient's tongue.

Impervious [ɪmˈprɛvɪəs] непроницаемый
Vaccinated organisms are impervious for invasion of bacteria.

II. Analyze the structure of the following terms:
tubercle, tubercular, tuberculate, tuberculation, tuberculigenous, tuberculin, tuberculization, tuberculosis, tuberculous, antitubercular.

III. Match the following English word combinations with the Russian ones:

1. gastric contents 1. анализ мокроты
2. caused by bacillus 2. смертность
3. death rate 6. содержимое желудка
4. miliary tubercles 4. просовидные бугорки
5. sputum analysis 5. вызванный бациллой

IV. Translate the following sentences. Pay attention to the Objective with the Infinitive:

Pattern: We know penicillin to be effective in treating inflammations.

Мы знаем, что пенициллин является эффективным средством при лечении воспалений.

1. Medical men know bacteria to be killed by boiling. 2. The surgeon ordered the nurse to bring to the dressing room the patient with open bleeding wound on the leg. 3. The students watched the surgeon make a midline abdominal incision with a scalpel. 4. We need iron to make the hemoglobin, or red colouring matter of the blood cells, that provides the power to carry oxygen from the lungs to all parts of the body.

V. Change the following complex sentences into simple ones using the Objective with the Infinitive:

Pattern: Pasteur showed that alcoholic fermentation was due to living organisms.
Pasteur showed the alcoholic fermentation to be due to living organisms.
1. He found that lactic fermentation was caused by bacteria. 2. Many health officers believe that it is necessary to pasteurize milk. 3. Scientists consider that polio virus enters the body through the mouth or nose. 4. The physician told the patient's mother that the boy should remain in bed for at least five days.

**DRUGS USED IN THE TREATMENT OF TUBERCULOSIS**

Tuberculosis is an infectious disease caused by the tubercle bacillus. This organism, discovered by Robert Koch in 1882, most commonly first invades the lung by inhalation of droplets or air-borne material containing the infecting agent. This disease may spread to almost any part of the body — lymph nodes, central nervous system, bones, joints, genitourinary and gastrointestinal tracts. Miliary tuberculosis, one of the most serious tuberculous infections, is characterized by small lesions scattered throughout the body. The tubercle bacillus, Mycobacterium tuberculosis, possesses a fatty or waxy coating that makes the organism impervious to many drugs. It causes tubercles, specific lesions in this disease, to form in animal tissues. The organism can often be recovered from these tubercles. When the sputum analysis reveals no tubercle bacilli (so called negative sputum) aspiration of gastric contents may demonstrate them, since they are being swallowed in 'open' cases.

The death rate from the tuberculosis in the United States has dropped to 8.41 in 100,000. However, approximately 69,000 new cases are reported each year. The number of persons requiring treatment in the world is increasing. This includes inactive, active, and potentially active cases; some are persons who have been discharged from the hospital and others who refuse hospitalization or treatment in the home. The infectiousness of the disease tends to increase its incidence. Eradication of tuberculosis will require the cooperation and support of the community, the nation, and indeed the whole world.

Isoniazid, streptomycin, and PAS (Para-aminosalicylic acid) remain the three best antitubercular drugs. The administration of any one of these drugs for any length of time, even in adequate dosage, leads to the development of resistant organisms. Two of the above-mentioned drugs should be given together in long-term therapy. The administration of three is not superior to the administration of two. Any regimen containing isoniazid is superior to all others in sputum conversion and X-ray improvement. Streptomycin is given in doses of 1 Gr. daily (in some cases twice weekly) with 200 mg. of isoniazid daily. A dose of 1 Gr. streptomycin with 20 Gr. of PAS, given daily (or twice weekly) is a good combination and only slightly inferior to the one containing isoniazid. The British prefer the streptomycin-isoniazid combination because it has been noted that many patients fail to take the PAS that has been prescribed and thus the tubercle bacilli become resistant to streptomycin, the drug they do take. The armed forces of the United States obtain very satisfactory results with the combination of 300 mg. of isoniazid and 10 to 12 Gm. of PAS in most cases in the primary treat-
ment of patients with sensitive organisms. Long-term uninterrupted therapy for a minimum of one year in active tuberculosis and continuous uninterrupted therapy for two or three years or longer in advanced and cavitory tuberculosis are necessary.

Drug treatment is not a substitute for bed rest and sanatorial care, although it is given on an outpatient basis by many physicians and health departments in less serious cases for reasons of economy and convenience. The United States Public Health Service has estimated that there are about 400,000 cases of tuberculosis in the United States. About 45 per cent of this number are cared for at home.

Post-Text Assignments

I. Skim through the text and find the key sentences. Translate the key sentences.
II. Read the text closely in paragraphs. Define the main subject of each paragraph.
III. Answer the following questions:


IV. Speak shortly on the following items concerned with tuberculosis:

1. Tuberculosis as an infectious disease.
2. Miliary tuberculosis.
3. The problem of tuberculosis in the world scale.

V. Find in the text the information dealing with drug treatment of tuberculosis. Name the three best antitubercular drugs used in the USSR and in the USA.

VI. Read, translate and entitle the following text. Discuss the information you have got from it.

THE TUBERCULIN TEST

One of the most useful tests assisting in the diagnosis of tuberculosis is the tuberculin test. Every physician should be able to perform and to interpret the tuberculin test. For routine case-finding the Mantoux test is more accurate in that a known amount of tuberculin can be given and the dose increased if needed. The test is done by injecting 0.1 cc of tuberculin, containing either 0.1 mg of O1d Tuberculin or 0.0001 mg of the purified protein derivative into the superficial layer of the skin. The tuberculin is so diluted that the testing dose is contained in 0.1 cc of the dilutant.
In the injection of either O.T. ¹ or P. P. D. ² of tuberculin, a 1.0 cc tuberculin syringe with a 26-gauge, platinum needle of half-inch length should be used. The injection should be made on the flexor surface of the forearm about two inches below the elbow. The skin should first be cleansed with alcohol. The needle is inserted intradermally.

A reaction is indicated by redness, induration, and oedema of the subcutaneous tissues over the area injected after 48 hours. This positive reaction reflects the allergic state.

VII. Read and translate the following Summary. Discuss the information presented.

In an outbreak of primary tuberculosis in East Lotian twelve cases, all but two traceable to a single contact, were identified. Ninety-seven children were vaccinated by jet injector using «double-strength» vaccine. Local reactions to the vaccine were seen in 64% of children. Three months after vaccination 65% were negative on tuberculin testing. The reason for these poor results with B.C.G. vaccination by jet injection is not known.

SECTION VII
TOXICOLOGY

UNIT 1

Texts: 1. The Subject of Toxicology.
   2. Hemodynamic Changes after Endotoxin Injection.
Word-Building Elements: Term-element «toxic».
Grammar: It- Sentences.

Pre-Text Assignments

I. Learn the following words:

Stricture [ˈstrɪktʃə] сужение
Barbiturates lead to stricture of the lumen in the vessel.
Ingest [ɪnˈdʒest] глотать, принимать
The effect of treatment depends upon the amount of drug ingested.
Poisoning [ˈpɔɪznɪŋ] отравление
Acute poisoning may be caused by the overdosage of a strong effective drug.
Cripple [ˈkrɪpl] калека, калечь
The man became crippled for the rest of his life.
Suicide [ˈsjuəsaɪd] самоубийство
Many schizophrenics commit suicide.

II. Analyze the following terms. Memorize the meaning of the term-element «toxic».

toxicin, toxicogenic, toxicant, toxemia, toxicide, toxicoid, toxicologist, toxiferous, toxification, toxitherapy.

¹ O. T. — Old Tuberculin
² P. P. D. — Purified Protein Derivative
III. Match the following English word combinations with the Russian ones:

1. chemical properties 1. в небольшом количестве
2. in small quantities 2. потенциальный яд
3. potential poison 3. токсическая доза
4. poisonous dose 4. вредное действие
5. harmful effect 5. химические свойства

IV. Find substitutes for the following word combinations:

1. the quality of being poisonous 1. hypoglycemia
2. the scientific study of poisons 2. depressant
3. deficiency of sugar in the blood 3. toxicology
4. involuntary contractions of muscles 4. convulsions
5. an agent retarding any function 5. toxicity

V. Translate the following sentences. Define the function of «it»:

1. It is well known that the great majority of bacteria are harmless and even beneficial for the organism. 2. It is impossible to maintain normal health and metabolism without vitamins. 3. It is the parents' duty to take counter measures against germs, since children, by playing in dirty places, so often become infected by germs of disease. 4. It is no use to administer this medicine to the patient. 5. It is very important that the patients be advised as to their manner of living. 6. It is stuffy in the ward.

THE SUBJECT OF TOXICOLOGY

Toxicology is the scientific study of poisons — their source, chemical properties, actions, detection, and the treatment of conditions produced by them. A poison is a substance which, when introduced into the body in small quantities, may produce death or cause serious injury to one or more organs in the average healthy individual. It is often difficult to distinguish between drugs and poisons. All drugs are potential poisons, since overdosage may cause dangerous or fatal symptoms, and many poisons are useful drugs if they are administered in small doses. The margin of safety (the difference between the therapeutic and poisonous doses) may be extremely small in some cases. Some chemicals may be foods, drugs, or poisons, depending upon the amount ingested and the method of administration. Diagnosis of poisoning is often difficult because, although the toxic symptoms produced by overdosage with drugs are characteristic they may be simulated by symptoms caused by disease. For example, poisoning with central nervous system stimulants may be mistaken for epilepsy, hypoglycemic convulsions for tetany, while symptoms caused by central nervous system depressants may mimic those that are caused by vascular accidents or brain tumours.

Occurrence of Poisoning. Acute poisoning may be: 1) Accidental. Accidental poisoning mostly occurs among young children who ingest substances found around the home, such as insecticides, cleaning fluids, and drugs. It may also occur among adults through attempts at self-medications, mistaking one drug for another, and clinical overdosage. 2) Suicidal. The substances most frequently used today for this purpose
are carbon monoxide and the barbiturates. 3) Criminal. This form is not nearly so prevalent today as formerly.

**Causes of Poisoning.** Poisoning may occur by: 1. Inhalation of gases, volatile liquids, or dusts (e.g., carbon monoxide, carbon tetrachloride, lead dust). 2. Absorption through the skin (e.g., aniline dyes). 3. Overdose with drugs by injection. 4. Ingestion of toxic materials.

**Chronic Poisoning.** This generally occurs as vocational or industrial poisoning among workers who inhale or absorb small amounts of a chemical over long periods of time. The harmful effects may be transient or permanent. This type of poisoning may also occur with prolonged treatment with drugs.

**Acute Poisoning.** Accidental Poisoning in Children. Each year over 1500 normal, healthy children in the United States die of acute accidental poisoning. There are also many who recover but remain crippled by lead encephalitis, liver or kidney damage, and esophageal stricture. One third of the accidental poisonings in children are due to the ingestion of drugs, and the commonest of these drugs are the salicylates (mostly aspirin, particularly the coloured aspirin tablets containing sugar and a flavouring agent) and the barbiturates. Other dangerous substances are common household products such as insecticides, rat poison, bleaching agents, cleaning fluids, permanent-wave lotion, shampoo, nail-polish remover, antifreeze, detergents, furniture polish, and kerosene. The ingestion of kerosene is the cause of many deaths and sometimes occurs when this substance is kept in soft-drink bottles.

Most cases of accidental poisoning in children are preventable. However, when a child does swallow a poison, prompt and appropriate treatment may be lifesaving or prevent crippling.

**Common Symptoms.** The common symptoms of acute poisoning are as follows:

1. Nausea, vomiting, abdominal pain, diarrhea. Source: many chemicals and drugs, food poisoning, black widow spider (abdominal pain, rigidity).
2. Corrosive burns on the lips, mouth, and throat. Source: mineral acids, caustic alkali, oxalic acid, ammonia, bichloride of mercury, phenol, and fluorides.
3. Respiratory and circulatory symptoms such as cyanosis, shock collapse, sudden loss of consciousness and convulsions. Source: lack of oxygen (replacement by other gases, including odourless carbon dioxide, from decaying vegetables and fruit), many chemicals, and drugs.
Treatment. Most emergency treatment is symptomatic, and rapidity of action may result in the saving of a life or the prevention of disabling sequelae. The general principles for emergency treatment are as follows:

1. Identify the poison so that specific measures may be instituted with appropriate antidotes.

2. Remove most of the poison from the stomach by gastric lavage or emetics (1 tbsp. of mustard or 2 tbsp. of sodium chloride in a glass of warm water, or apomorphine). Children may be given a glass of milk, inverted, and gagged with the finger. Gastric lavage is frequently life-saving. When the stomach tube is used, antidotes and other substances (cathartics, when indicated) may be administered before removing the tube. Gastric lavage is contraindicated not only following ingestion of strong acids or caustic alkalies where passage of the stomach tube may cause perforation, but also in coma to avoid aspiration pneumonia.

3. Administer a physiologic antidote.

4. Institute supportive or restorative measures. These may be necessary even before the removal of the poison in order to keep the patient alive.

Post-Text Assignments

I. Skim through the text and define its main idea.

II. Read the first paragraph of the text and answer the following questions:

1. What is the subject of toxicology? 2. What definition of a poison is given? 3. Can you name five drugs which may be poisons if over-dosaged? 4. Prove that all drugs are potential poisons. 5. Can you name any chemical which may be food, drug and poison?

III. Read the text under the title «Occurrence of Poisoning» and speak about the forms of acute poisoning.

IV. Write ten names of chemicals-poisons out of the text and learn them.

V. Name the common symptoms of acute poisoning.

VI. Find in the text the information concerned with emergency treatment of acute poisoning and identify its general principles.

VII. Retell the text according to the following plan:

2. Accidental poisoning.
3. Chronic poisoning.

VIII. Compose a Case history using the information you have got from the text.

IX. Read and translate the following text:

HEMODYNAMIC CHANGES AFTER ENDOTOXIN INJECTION

When the enteric bacterial lipopolysaccharide or endotoxin gains access to the circulation, profound hemodynamic changes occur. These abnormalities may be the result of a direct action of the toxin at the cell membrane of a single target organ, for example, the capillary endothelial cell, or they may reflect multiple systemic involvement.
In the present study, the investigations were directed at patterns of systemic pressure, peripheral oxygen consumption and systemic vascular resistance after endotoxin injection. It appears that arterial pressures decline immediately after endotoxin injection, despite a transient rise in systemic vascular resistance and pulmonary vascular resistance. In this study, it also appears that there is a decreased extraction of oxygen by the peripheral tissues following endotoxin injection. This could occur by several mechanisms, two of which are hypoperfusion or peripheral cellular damage. Since the vascular resistance was low during the decreased extraction and since constant flow rates were maintained, it would appear that these were not due to hyperfusion or shunting but to decreased cellular extraction of oxygen. Certainly, this finding merits further study. It was also noted that significant fluid shifts followed the introduction of endotoxin.

UNIT 2

| Texts: 1. Acute Poisoning and Chronic Alcoholism.  
| 2. Vitamins.  
| Word-Building Elements: The prefix anti-.

Pre-Text Assignments

1. Learn the following words and word combinations:

Alcoholic beverage алкогольный напиток
Alcohol poisoning results from drinking excessive amounts of alcoholic beverages.

Stupor [ˈstjuːpə] ступор, состояние неживительности
Stupor may fall into a deep sleep or stupor.

Rehabilitation [ˌriːhəˈbɪlɪˈteɪʃn] восстановление работоспособности
Rehabilitation leads to the rehabilitation of vital functions of the organism.

Frustration [ˈfrʌstrəʃn] понижение полового влечения
Constant use of the more potent alcoholic beverages may cause frustration.

Drunkenness [ˈdrʌŋkwənɪs] алкогольное опьянение, пьянство
Drunkenness presents the most dangerous social evil in the USA.

11. Form new words adding the prefix anti-. Define the part of speech and translate:

Model: toxin — antitoxin антитоксин

body, gen, ferment, pepsin, rachitic, septic, serum, virus, vaccination, bacterial, acid, catalyst, coagulant, contagious, convulsive, enzyme, febrile, microbial.

111. Analyze the structure of the following terms:

anticonvulsant, alcoholism, hyperirritability, paraldehyde, adrenocorticosteroid, psychoneurotic, psychotherapy, intoxication.

IV. Match the following English word combinations with the Russian ones:

1. acute poisoning 1. чрезмерное количество
2. excessive amount 2. перерasti в кому
3. progress to coma          3. расстройство дыхания
4. respiratory failure      4. малейшее раздражение
5. minor irritation          5. острое отравление

V. Find substitutes for the following word combinations:

1. nearly complete unconsciousness  1. barbiturate
2. removal of water from a substance  2. frustration
3. a morbid state caused by toxins   3. intoxication
4. failure in attaining an objective  4. stupor
5. a salt of barbituric acid        5. dehydration

VI. Translate the following sentences. Define the functions of the Infinitive:

1. The instruments to be used during the operation are sterilized by the surgical nurse. 2. There are special dispensaries to treat tuberculosis. 3. Blue labels are stuck to indicate drugs to be used for injections. 4. The tumour to be excised is 2 cm in diameter. 5. Sanitation is the science of how to preserve the public health. It is insanitary to live among insects, dirt and germs and to drink unclean water and milk. 6. To allow germs to spread abroad from the persons who are ill is also insanitary.

ACUTE POISONING AND CHRONIC ALCOHOLISM

Acute Poisoning (Drunkenness). Acute alcohol poisoning results from drinking excessive amounts of alcoholic beverages. The symptoms may be divided into two stages; 1) early excitement and 2) depression that may progress to coma. The individual may fall into a deep sleep or stupor. Sensations are lessened; hence pain may not be experienced. All muscles are relaxed. The face becomes cyanotic and the extremities are cold. The breathing is slow and snoring, and the pulse is rapid, strong, and bounding. Coma, with a rapid, weak, thready pulse, may follow. Death frequently results from respiratory failure due to the depressant action of alcohol on the respiratory center.

Treatment of Acute Intoxication. The liquor is removed from the stomach by gastric lavage. The patient is kept warm. Five to 10 per cent glucose in one or two liters of saline may be administered. Twenty units of insulin and the contents of an ampule of vitamin B complex may be added to the saline solution to hasten the elimination of the alcohol and combat dehydration, which often occurs. Artificial respiration or oxygen may be administered to diminish the respiratory depression. Anticonvulsant therapy is recommended to prevent seizures that frequently occur when the patient is recovering from acute alcoholism.

The tranquillizing drugs are used to control anxiety, restlessness, and hyperirritability. They are particularly useful in the acute stage and in the period following withdrawal of the drug. The barbiturates are the sedatives of choice to combat insomnia. The smallest effective dose should be prescribed. Paraldehyde is given orally and rectally as a sedative. Chloral hydrate is also given orally and rectally as a sedative. The adrenocorticosteroids and ACTH are effective 1) in controlling the symptoms and reducing the period of disability in acute alcoholism, 2) in controlling the postwithdrawal symptoms, and 3) in delirium tremens. It is
believed that improvement occurs because of the effect of the corticos-teroids on the phenomena resulting from the severe stress that the alcohol induces in man. The use of steroids and paraldehyde in alcoholism has decreased with the introduction of the tranquilizers.

Chronic Alcoholism. Chronic alcoholism results from the constant use of the more potent alcoholic beverages. The habit is more prevalent in psychoneurotics and emotionally immature individuals who wish to escape from the realities, frustrations, and responsibilities of life. It may result from heavy social drinking over a period of years. There are about 60 million social drinkers in the United States. They drink because the presence of alcohol in the circulation reduces selfcriticism and shyness and allows an escape from the unpleasant realities of life. With moderate drinkers, life becomes more pleasant because the alcohol produces relaxation and contentment and minor irritations are minimized. Yet even social drinking may present a problem. It often causes a lowering of moral standards and a disregard for the rights of others. It is extremely dangerous to drive a motor vehicle after drinking. Twenty-seven persons are killed daily in the United States as the result of drinking by either drivers or pedestrians.

A chronic alcoholic is an unsuccessful social drinker. There are about four million chronic alcoholics in the United States. They drink alcoholic beverages excessively even though they know that this will injure their health and jeopardize their jobs, their family relationships, and their place in society. Alcoholic addicts are sick people and should be treated with sympathy and understanding. The main symptom is an intense craving for alcohol. Some persons show no signs of intoxication, while others appear to be drunk all the time.

Symptoms of Chronic Alcoholism. Symptoms of chronic alcoholism are due to the direct effect of alcohol on the central nervous system, degenerative changes in the tissues, and inadequate diet. The most common manifestation is a redness of the nose, face, and conjunctiva. Muscular tremors, peripheral and optic neuritis, various psychoses, and dulling of mental faculties result from nerve degeneration. About 15 per cent of the chronic alcoholics develop various psychoses, including delirium tremens.

Treatment of Chronic Alcoholism. The treatment may be divided into three categories: 1) nutritional therapy, 2) psychotherapy, and 3) drug therapy.

Nutritional Therapy. A high-calorie diet supplemented with vitamins, especially thiamine chloride (B), is prescribed. Vitamin C (ascorbic acid) is also administered. The vitamins are given orally or intravenously, according to the needs of the patient.

Psychotherapy. This is the most difficult form of treatment. The physician is dealing with a person who has a problem or problems he wishes to avoid or forget. It is necessary to discover and remove the cause. A change in environment may be indicated.

In a great many cases, an organization called Alcoholics Anonymous (A. A.) meets a definite need in the treatment and prevention or relapse in alcoholism. Rehabilitated former alcoholics work with chronic alcop
holics and offer the physical, mental, and spiritual aid necessary for their recovery. About 40 per cent of chronic alcoholics finally stop drinking. About 10 per cent never stop.

Post-Text Assignments

I. skim through the text and define the main problem discussed in it.
II. Read the text closely and find correct answers to the following questions:


III. Find the key sentences of each paragraph of the text and translate them.
IV. Write all compound medical terms out of the text and translate them.
V. Read and translate the following extract. Make up five questions on its contents.

GUIDELINES FOR ADMISSION
OF ALCOHOL-DEPENDENT
PATIENTS TO GENERAL HOSPITALS

The following guidelines are offered to assist the examining physician in making his determination regarding admission to a general hospital.
A patient who is diagnosed as «alcoholic» by a physician, or who is so known by the hospital or by the responsible agencies and individuals, should be admitted if he:

a) has an infectious disease.
b) has hyperthermia.
c) has a history of convulsions, or a poorly controlled convulsive disorder, and has been drinking.
d) has a disulfiram — alcohol reaction.

VI. Read, translate and retell the following text:

VITAMINS

Vitamins are of great importance for the human metabolism. The lack of them may produce deficiency diseases. Vitamins are catalysts which encourage and accelerate certain body processes necessary to health. Vitamins A, B, C, D and others are well known to everybody.

Vitamin A — the reddish, crystalline pigment carotene can be converted by animal organisms into vitamin A. We find it in many vegetables such as carrots, tomatoes, pumpkins, in egg yolk, butter and fish-liver oils. Vitamin A promotes growth and ensures efficient regeneration of visual purple, is essential for the maintenance of normal structure and function of epidermis and mucous membranes. In the absence of vitamin A, the mucous membranes lose some of their resistance to infective microorganisms. Without vitamin A children are likely to be underdeveloped, dull, sickly and to have eye diseases.
Vitamin B complex. This term refers to several vitamins different or split off from the original vitamin B, and identified chemically or by their biological effects. Among these are: vitamin B₁, B₂, B₃, B₆, etc. Vitamin B is a tineuritic antiberiberi vitamin. It effects growth and appetite, reduces sugar content in diabetes, stimulates biliary action, and is necessary for carbohydrate metabolism. Milk, eggs, grain cereals, yeast, fruits and vegetables are all sources of vitamin B.

Vitamin B₂ — riboflavin is widely distributed in plants — in vegetables and in milk, at least 90 per cent appears to be in free form.

Vitamin B₃ — it is a rat antidermatitis and the chick antidermatitis. It is not known whether it is essential for human nutrition.

Vitamin B₄ — crystalline vitamin is a highly potent antianemic substance effective against neurologic as well as haematologic manifestations. It may be used without ill effects on patients hypersensitive to liver extracts. It stimulates erythrocyte maturation. It strongly acts as an important growth factor in some undernourished children.

Vitamin C — is ascorbic acid. Vitamin C deficiency disorders are scurvy, tendency to haemorrhages, diminished resistance to infection, anemia. Vitamin «C» foods are: raw cabbage, young carrots, lettuce, celery, onions, tomatoes, potatoes, orange juice, strawberries. Citric fruits are especially rich in this vitamin.

Vitamin «D» — the antirachitic vitamin. It enables the bones and the teeth to make use of the calcium and phosphorus in the foods. Young children lacking vitamin «D» are likely to have bow legs, small sunken chests, beaded ribs and soft teeth. Vitamin «D» is made in the body by the action of ultraviolet rays. Milk, cod liver oil, salmon and cod livers, egg yolk, butter, ergosterol activated by ultraviolet rays are sources of vitamin «D» potency.

All vitamins are associated one with another and with proteins, carbohydrates, and mineral salts.

VII. Discuss the text according to the following plan:
1. The types of vitamins.
2. Vitamins effect on the human metabolism.

SECTION VIII
STOMATOLOGY
UNIT 1

Texts: 1. Pooling the Efforts of Stomatologists.
2. Toothache and Related Pain.
Word-Building Elements: Term-element «logy» ...

Pre-Text Assignments

1. Learn the following words and word combinations:

Under (through) the auspice ['ɔ:spɪs] of smb. при чьем-либо содействии, под чьим-либо руководством
This visit was arranged through the auspices of the Anglo-Soviet cultural agreement.

**Oral surgery** ['ɔːral] стоматхиургия

We were enormously impressed by the cases of oral surgery.

**National survey** ['nævəri] обследование населения

We have been unable to complete our national surveys of dental health of adults and children in 1968.

**Areas of collaboration** [keɪˈæbərəˈreɪʃn] сферы сотрудничества

There are very important areas of collaboration between the Soviet Union and Great Britain.

**To be irksome** ['ɜːksəm] быть утомительным, скучным

The treatment of toothache should be without pain, should be quick, and should not take so much time from the population's lives as to be irksome or annoying.

**Periodontal disease** периодонтит

Periodontal disease is the disease of investing and supporting tissues surrounding a tooth.

II. Translate the following words. Memorize the meaning of the term-element «logy» - наука:

- dermatology, physiology, stomatology, psychology, biology, histology, pharmacology, epidemiology.

III. Read and translate the following words. Underline suffixes. Use the words in sentences:

- Cooperation, collaboration, information, evaluation, prevention, development, discussion, stomatologist, beginning, arrangement.

IV. Match the following English word combinations with the Russian ones:

1. oral surgery
2. exchange of information
3. areas of collaboration
4. dental diseases
5. to eliminate smth
6. international collaboration
7. prevention of dental disease

1. обмен информацией
2. сферы сотрудничества
3. заболевания зубов
4. стоматхиургия
5. ликвидировать, устранять ч.-л.
6. предупреждение заболевания зубов
7. международное сотрудничество

V. Find substitutes for the following word combinations:

1. the decay of teeth
2. the branch of medicine studying the transmission and control of epidemic disease
3. a feeling of distress, suffering, or agony, caused by stimulation of specialized nerve ending
4. pertaining to teeth
5. the branch of medicine dealing with the mouth and its diseases
6. pertaining to the mouth

1. oral
2. stomatology
3. epidemicology
4. pain
5. dental
6. caries
VI. Translate the following sentences. State the tense-form and Voice of the verbs:

1. The patients were examined by highly qualified specialists.
2. Many maternity homes, nurseries and kindergartens were built in the USSR to protect mothers with their children. 3. After his experiments were completed he delivered the report at the scientific conference.
4. The report was awarded the highest prize. 5. The instruments necessary for the operation were sterilized by the nurse on duty.

VII. Open the brackets and put the verbs in the required form:

1. An attack of pain (to precede) by physical and mental overstrain.
2. The doctor found out that the size of the liver (to enlarge).
3. The X-ray examination (to perform) as it was very important for making the diagnosis.
4. That operation (to perform) under general anaesthesia.
5. The study (to undertake) to evaluate patients with Stage I and II carcinoma of the breast.

POOLING THE EFFORTS OF STOMATOLOGISTS

A group of well-known British stomatologists, including professors L. SLACK, E. D. FARMER and R. DUCKWORTH, recently visited the Central Stomatology Research Institute of the Ministry of Public Health of the USSR.

Here Professor G. L. SLACK speaks, at the request of «Moscow News» correspondents, about British-Soviet cooperation in stomatology and the development of this science.

Q.: Could you tell us a little about the purpose of your visit?

A.: As you probably know, this visit was arranged through the auspices of the Anglo-Soviet cultural agreement, which was signed between our two countries slightly more than a year ago. The exchange of specialists between countries is something which is of great importance to us, because we are aware that international boundaries are difficult to cross when there are difficulties in language. We understand that there is a great deal of important work going on in the Soviet Union, and it is our wish that we should discover the type of work that is going on, because from our previous discussions with members of the stomatology group in this country, we realize there are some important areas about which we would like to have further information. And this really is the basic reason for our coming to this country.

Q.: Would you tell us of what you have seen on the work of the Institute?

A.: We were enormously impressed by the cases of oral surgery and facial reconstruction which we saw. ... We are very interested to understand how the arrangements are made to collect the information and so design the dental institutes and produce the number of stomatologists that are required to provide dental care for the whole population. We are working on such problems in the United Kingdom, but the distances are much smaller. We have been unable to complete our national surveys of dental health of adults and children in 1968, and we are planning to repeat this periodically in order to build up our own informa-
tion. So you can understand that there are very important areas of collaboration between our two countries.

Q.: What is your evaluation of Soviet-British medical cooperation?

A.: Anglo-Soviet cooperation really is perhaps at the beginning although a considerable start has been made. We would like to see the development of exchanges at the junior staff level. We would like to see the development of international collaboration over various studies. We believe that an exchange of information and data with regard to the prevention of dental diseases is perhaps the most important point which we have to discuss between our two countries.

Q.: Could you say a few words about the future of stomatology?

A.: One is research to eliminate the need for dental care. That’s stating it in its extreme case and there is no doubt that great advances are being made. I do believe that with international collaboration, it should be possible to gain control of the dental diseases, of dental caries and periodontal disease in a much shorter time, if the collaboration is fruitful. This too is another part, but from the general population’s point of view, the important thing is that the treatment of their condition should be without pain, should be quick, should be without any kind of disturbance to their normal daily lives, and indeed, should not take so much time from their daily lives as to be irksome or annoying.

We believe that as things are now developing, for example, we heard that in this Institute there are arrangements for general anaesthesia to complete everything all at one visit. It’s research of this kind that is much more valuable to the population, so that they can possibly look forward to the time when you won’t need to have any dentists or stomatologists in the country at all. That, of course, is a long way off, but this is the way in which things ought to develop.

Post-Text Assignments

I. Read and translate the text. Find sentences expressing the central idea of the text.

II. Skim through the text and find sentences in the Past Indefinite Passive. Translate the sentences.

III. Speak on the following items:

1. The visit of British stomatologists to the USSR.
2. The achievements of the Soviet Central Stomatology Research Institute.
3. Anglo-Soviet medical cooperation.

IV. Write a short summary of the text.

V. Read and translate the following summary of the book:

TOOTHACHE AND RELATED PAIN

The aim of the book is to help the reader to develop his understanding of pain in general and toothache in particular, so as to improve his diagnostic ability. Treatment is not featured except in so far as it reflects on diagnosis. The first section deals with the sensory innervation
of the mouth, teeth, and surrounding tissues, and discusses the transmission of trigeminal-nerve impulses in the central nervous system. Chapter 6 considers the investigation of pain with particular reference to the testing of tooth vitality. In chapter 7, Dr. Mumford makes the point that when pain occurs in teeth it does not necessarily mean that disease is present: external stimuli can influence pain production and cessation independently of any disease. Further chapters deal with pain due to factors within the jaws, pain due to disturbance of the masticatory system, and pain caused by soft-tissue lesions. The text is easy to read, and good use is made of clinical examples drawn from the author’s experience. At the end of each chapter an exhaustive list of references is provided. The book is illustrated throughout with excellent photographs, radiographs, and diagrams. Successful diagnosis demands a deep knowledge plus a systemic approach to elucidating information.

This book succeeds admirably in placing a mass of knowledge on the subject of toothache and related pain before the reader. It can be recommended to all students and members of the medical and dental profession.

VI. Speak shortly about:

1. The aim of the book.
2. The main problems the book is concerned with.
3. The reader circle the book is designed for.

UNIT 2

Texts: 1. Dental Caries.
2. Dental Health.
3. Toothache.

Word-Building Elements: The prefix under-.

Pre-Text Assignments

1. Learn the following words:

Decay [dɪˈkeɪ] гниение, разложение
The decay involves the pulp and pain occurs.

Carious [ˈkærəs] гнилой, карнозный.

When the dentine is carious and the pulp approaches the pain begins.

Radicle [ˈrædɪkl] корешок

Radicular [rəˈdɪkjʊlər] корешковый

The infection enters the radicle and progresses causing granuloma or radicular cyst.

Sequelae [sɪˈkwɪliː] последствия

Treatment may be instituted early enough to prevent fatal sequelae.

II. Form new words adding the prefix under- and translate them:

Model: developed — underdeveloped недоразвитый

nourish, age, nutrition, nourishment, saturate, size, toe, feeding, development, ground, lip.

158
III. Analyze the structure of the following terms:
carbohydrate, liquefaction, pericementitis, hypoplastic, underdeveloped, toothpaste, periodontitis, undernourished, discolouration, subcutaneous, intratracheal.

IV. Match the following English word combinations with the Russian one:
1. mouth hygiene 1. дальнейшее лечение
2. further treatment 2. протезный кабинет
3. denture room 3. регулярное рентгенологическое обследование
4. regular screening 4. гигиена ротовой полости
5. caries prevention 5. профилактика карIESа зубов

V. Find substitutes for the following word combinations:
1. inflammation of the dentine 1. caries
2. around a tooth 2. hereditary
3. derived from a parent or other ancestor 3. necrosis
4. death of a tissue or a bone 4. dentinitis
5. molecular decay of a tooth 5. periodontal

VI. Give antonyms for the following words and word combinations:
unknown etiology, to be affected, to progress, common, end, the latter, regular use.

VII. Answer the following questions. Define the types of questions:
1. Can you give intravenous injections? 2. What is it easier to give intramuscular or intravenous injections? 3. How old were you when you entered the Institute? 4. Do you know much about measles? 5. Why is it important to give first aid on the spot? 6. Must an ambulance doctor have deep knowledge of toxicology?

DENTAL CARIES

This practically universal condition in civilized people is still of unknown etiology. Predisposing factors are hypoplastic defects of the enamel and dentine, malocclusion and other developmental irregularities, prosthetic and orthodontic appliances, prenatal and postnatal nutritional carbohydrate content, chronic inflammation of the free and septal gingiva, pregnancy, and amount and composition of saliva. While most common in childhood, it may occur at any age and disappear and recur in the same person during various periods of life, one or many teeth may be affected. It begins as a chalky discoloration of the enamel, which feels rough and crumby. Parts break off from time to time, and the dentine becomes softened. The latter is followed by liquefaction of the organic matrix. Later, the decay involves the pulp. Pain occurs only when the dentine is carious or when the pulp is approached. As the carious process progresses, the pulp tissue is infected and breaks
down, becoming necrotic. The infection may progress to the apical end of the tooth, resulting in pericementitis, apical abscess, granuloma or radicular cyst.

Treatment, however, by inhibiting the decay process, and inserting a filling, may be instituted early enough to prevent these sequelae. Regular use of the tooth-brush and a moderate carbohydrate diet are prophylactic measures.

Post-Text Assignments

I. Skim through the text and define its main idea.

II. Read the text closely and answer the following questions:


III. Speak about the treatment administered to prevent necrosis of a tooth.

IV. Read, translate and retell the following text:

DENTAL HEALTH

Evidence produced through nationwide research has shown that at least a third of all tooth-brushes used in Britain are completely useless. The research was carried out on behalf of the British Dental Health Foundation which is a registered charity designed to halt the national epidemic of dental ill health. Presenting the research the Foundation's chairman, Mr. Jack Manning, said, «In modern society, with an industrial diet, one cannot have mouth care without an adequate tooth-brush. It is the one toilet article which is essential to control gum disease, the major source of tooth loss».

Last year four million was spent on press and TV advertising for toothpaste compared with a mere 5, 000 on tooth-brushes. Yet dentists say that the tooth-brush is the main weapon for removing plaque (the form of bacteria on the teeth which causes decay and disease).

One of the Foundation's name is to educate the public in maintaining a high standard of oral hygiene at home. Obviously the first step is to get average British to change his tooth-brush more than he does at present.

V. Read, translate and discuss the following text:

TOOTHACHE

Toothache is very unpleasant. A slight tooth cavity or an inflammation of the gum might mean loosing a tooth. There are some 999 known dental complaints. «Which are the hardest to treat?» This question is answered by Gennady PAKHOMOV, D. Sc. (medicine), Deputy Direc-
tor of the USSR Ministry of Public Health Central Dental Research Institute. "There are two groups of dental complaints", he said,—"caries and periodontitis. The first is commoner among the under-forties, the second among the over-forties; both are very common. We know that caries' first major rise coincided with the coming of refined sugar and the second with white flour, so it seems that here carbohydrates are involved, though it was found that a hereditary factor can also play a part."

Another question: What would you recommend against caries?

Answer: A system of caries prevention has now been worked out for every age group, from the embryo up, by a team under Anatoly RYBAKOV, Member of the USSR Academy of Medical Sciences, it includes a balanced diet for expectant and nursing mothers, calcium and fluorine preparations for the baby, teaching children dental hygiene as soon as they get their milk teeth, etc. The incidence of caries largely depends on a person himself. According to the well-known American dental specialist J. C. GREENE, if everybody took a few simple preventive measures, caries could be eliminated in two or three generations.

Q.: And what would you recommend against periodontitis?

A.: This complaint begins with an inflammation of the gum and winds up with the degeneration of the tooth socket lining. Here, too, early mouth hygiene is the best prevention.

Then tartar deposits should be removed regularly. Patients are given anti-inflammation therapy including stimulating the blood vessels. Surgical, orthopedic and physiotherapy treatment is used in advanced cases. But it must not be forgotten that the chances of a cure depend directly on how soon you see your dentist.

Q.: How much does a "toothache" cost in our country and abroad?

A.: The American figures in this table are taken from the American Dental Association.

<table>
<thead>
<tr>
<th>Service</th>
<th>USA dollars</th>
<th>USSR roubles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination and cleaning</td>
<td>—</td>
<td>6</td>
</tr>
<tr>
<td>Complete-mouth X-rays</td>
<td>—</td>
<td>23</td>
</tr>
<tr>
<td>Extraction</td>
<td>—</td>
<td>12</td>
</tr>
<tr>
<td>Root-canal therapy</td>
<td>—</td>
<td>85</td>
</tr>
<tr>
<td>Full denture, acrylic base</td>
<td>—</td>
<td>226</td>
</tr>
</tbody>
</table>

Basic dental treatment in the USSR is free. All polyclinics give free examinations and cleaning, which is also available in most schools, factories and offices. This regular screening finds the patient who need further treatment. In our country patients only pay for crowns and dentures.

1. Write a Summary of the reading material.
SECTION IX
INFECTIONOUS DISEASES

UNIT 1

Texts: 1. Influenza.
2. The Current Status of Influenza Vaccine.
Word-Building Elements: Term-element «necro».

Pre-Text Assignments

I. Learn the following words and word combinations:

Filtrable ['filtrəbl] фильтрующий
Filtrable virus ['vairəs] фильтрующий вирус
Filtrable virus causes many grave infectious diseases.
Constipation [,kɒnstə'peɪʃn] запор
Constipation occurs in case of many diseases of the gastrointestinal tract.
Contagious [kən'teɪdʒəs] заразный, инфекционный
The Grippe is the most dangerous contagious disease causing serious complications.
Diarrhoea [,dɛə'riə] понос
Vomiting and diarrhoea are the most characteristic symptoms of cholera.
Insomnia [ɪn'sʌmniə] бессонница
The patient suffered from insomnia and headaches.

II. Form new words adding the term-element «necro»: Memorize the meaning of the term-element «necro» - смерть:

Model: necro + biosis — necrobiosis отмирание ткани, некроз
bacillosis, -cytosis, -genic, -genous, -logist, -logy, -nectomy, parasite, -scopy.

III. Analyze the structure of the following terms:

conjunctivitis, acetylsalicylic, teratogenic, surveillance, adenovirus, rhinovirus, bronchopulmonary, bronchiectasis.

IV. Match the following English word combinations with the Russian ones:

<table>
<thead>
<tr>
<th>English</th>
<th>Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. chilly sensation</td>
<td>1. сильное изнеможение</td>
</tr>
<tr>
<td>2. severe prostration</td>
<td>2. ощущение озноба</td>
</tr>
<tr>
<td>3. mental depression</td>
<td>3. умственная депрессия</td>
</tr>
<tr>
<td>4. mortality rate</td>
<td>4. ежегодная иммунизация</td>
</tr>
<tr>
<td>5. annual immunization</td>
<td>5. смертность</td>
</tr>
</tbody>
</table>

V. Find substitutes for the following word combinations:

<table>
<thead>
<tr>
<th>English</th>
<th>Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. on the opposite side</td>
<td>1. antigenotherapy</td>
</tr>
<tr>
<td>2. excision of the necrosed tissue</td>
<td>2. contralateral</td>
</tr>
</tbody>
</table>
3. extreme exhaustion of the organism 3. shift
4. a change or deviation 4. necroectomy
5. treatment by stimulatory antibody 5. prostration
formation

VI. Transform the following sentences into the Past and Future making all the necessary changes:

1. Small changes in body water cause profound changes in functioning. 2. Within a few days or a week the changes usually disappear. 3. Pain develops early. 4. Within twelve to twenty-four hours the pain and fever subside and the tympanic membrane becomes less red and swollen. 5. At times the inflammation persists for several days.

INFLUENZA (GRIPPE)

Influenza is an acute infectious disease occurring in endemic, epidemic or pandemic form. The cause of influenza is now definitely established. It is a filtrable virus. The disease is contagious and spread directly from person to person by talking, coughing or sneezing. Healthy carriers, as well as patients, probably spread the disease. The incubation period is from 1 to 3 days. The onset is sudden with chilly sensations or a true chill, followed by fever. Common symptoms are severe frontal headache, pains in the back, limbs and eyeballs, dizziness, conjunctivitis and severe prostration. The temperature ranges between 37.7°C and 40°C and persists from two to five days. The respiratory rate is moderately increased. The pulse is accelerated but usually not very high. Vomiting and diarrhoea are frequent. Many patients also have respiratory symptoms, such as laryngitis, tracheitis, bronchitis. The tongue is dry and coated, the pharynx usually reddened.

In some cases catarrhal symptoms are replaced by nervous symptoms or prostration, insomnia, mental depression, intense headache, general pains. There may be serious complications after the grippe. One of them is pneumonia, which usually follows rather than accompanies the disease.

Influenza in which no complications arise usually lasts from 2 to 3 days, and even to 5 days. Convalescence may be prompt or protracted by weakness or mental depression. The mortality is low in the epidemic and endemic forms but may be high in pandemics.

Treatment. Treatment of the patients is symptomatic and supportive. Fluids should be given freely, nutrition maintained by means of a bland diet, and constipation obviated by the use of mild laxatives. The headache and general pains are alleviated by the use of acetylsalicylic acid (aspirin) in doses of 0.3 g. Codeine sulfate in doses of 15 or 30 mg. every 4 hours may be required for the cough.

Post-Text Assignments

I. Skim through the text and find the key sentences.
II. Write the key sentences out of the text and translate them.
III. Read the text closely and answer the following questions:

is the incubation period of Grippe? 6. What common symptoms of Influenza can you name? 7. How long do the active symptoms of the disease persist? 8. In which cases are nervous symptoms present? 9. What complications of Influenza are the most serious? 10. How long does the disease last? 11. When is the mortality high?

IV. Speak about the methods used in the treatment of Influenza.

V. Complete the following sentences choosing the proper words from those given in the right column:

1. Constipation is obviated by the use of ...
2. In case of intense headache the doctor must prescribe ...
3. The overdosage which caused acute poisoning was one of the ...
4. In case of moderate bleeding from the injury one may treat the wound with ...
5. The doctor administered the patient suffering from insomnia ...

1. sedatives
2. tonics
3. strong efectives
4. laxatives
5. iodine

VI. Read, translate and discuss the following text. Entitle each paragraph of the text using the active vocabulary of the unit:

THE CURRENT STATUS OF INFLUENZA VACCINES

More misinformation exists about influenza vaccine, among the public and in the medical profession, than about any other immunizing agent in common use. Physicians are confused. Uncertainty about the character and frequency of reactions to vaccine, the continuous parade of apparently «new» influenza viruses, seemingly contradictory information on the effectiveness of influenza vaccine, the necessity of annual immunization, and the difficulty in diagnosing influenza all combine to give influenza vaccine an image that is something less glowing.

Fundamental to an understanding of the problem is an appreciation of the antigenic changes that continuously occur, principally among influenza A viruses, but to a lesser extent among the B viruses. These changes, in pseudotechnical terms, are called «shifts» and «drifts».

Antigenic «shifts» are major antigenic changes occurring at about ten year intervals, such as the appearance of A-prime influenza in 1947, «Asian» influenza in 1957, and «Hong Kong» influenza in 1968. Antigenic «drift» signifies changes of lesser magnitude that occur almost continuously, resulting in the emergence of so-called variant strains. Immunologically, these resemble, but are not identical, the strains circulating previously. For example, in 1972 the «England» strain of influenza A was widely prevalent in the United States, this having «drifted» antigenically from the «Hong Kong» strain. Thus, influenza vaccine containing the «Hong Kong» influenza A virus provided some protection against the «England» variant in 1972, but the degree of protection was less than optimal.

An appreciation of this phenomenon illuminates two areas of confusion. First, many of the disparate results of efficacy trials can be explained: the influenza virus causing disease in the population under study
was not precisely the same as that containing in the vaccine used (drift).

Second, this continuous antigenic change creates a major problem for the Bureau of Biologics of the Food and Drug Administration, the Center of Disease Control, and the manufacturers of influenza vaccine. In order to market an optimally effective product, one must annually gaze into a crystal ball, anticipate the influenza virus that is going to circulate a year hence, and then manufacture vaccine with that strain. This annual guessing game is not always successful, but in the past ten years, remarkably enough, it has worked increasingly well.

**International Influenza Surveillance Network.** Chief among the factors responsible for this success is the worldwide Influenza Surveillance Network operated by the World Health Organization, of which the Center for Disease Control of the Public Health Service is the domestic arm. Representative strains of influenza virus from all over the world are continuously examined in order to identify antigenic changes as soon as possible. In general, there is remarkable uniformity of circulating influenza viruses throughout the world, and the appearance of a significant antigenic change in one part of the world is usually a signal that this variant strain will rapidly replace the others.

Under optimal conditions, i. e., when the circulating wild virus is closely related or identical to that in the vaccine, vaccination may reasonably be expected to provide from 80% to 90% protection against influenza. Needless to say, influenza vaccine, cannot be expected to provide any protection whatsoever against other respiratory infections, such as those caused by parainfluenza viruses, adenoviruses, coxsackieviruses, rhinoviruses, and the like. This point would seem selfevident, but it is difficult to determine what is influenza and what is not. There are many flulike syndromes that cannot be distinguished from influenza even by experienced clinicians. Influenza can be diagnosed with certainty only by serologic tests or by isolation of the virus.

**Official Recommendation.** The Public Health Service Advisory Committee on Immunization Practices recommends as follows: Annual vaccination is strongly recommended for persons of all ages who have chronic conditions as 1) heart disease of any etiology, particularly with mitral stenosis or cardiac insufficiency; 2) chronic bronchopulmonary diseases such as asthma, chronic bronchitis, bronchiectasis, and emphysema; 3) chronic renal disease; and 4) diabetes mellitus and other chronic metabolic disorders.

Annual vaccination is recommended for older persons, particularly those over 65 years, because influenza outbreaks are commonly associated with excess mortality in older age groups.

VII. Speak about the International Influenza Surveillance Network.

VIII. Read and translate without using a dictionary:

**Text I. TERATOGENIC EFFECTS OF ASIAN INFLUENZA**

This report is an extensive study by Wilson and associates of the teratogenic effects of Asian Influenza. This original report included only 126 of 738 pregnancies with serological data regarding Asian Influenza.
Since the results of our early report and other investigations have not been conclusive regarding the teratogenic effects of Asian Influenza, we decided to search for the medical records of the pregnancies in our original cohort which had not been examined. Our original cohort represented a large number of patients with serological evidence of Influenza infection. Few studies have had such substantiating serological data. Other studies have used primarily medical history for evidence of Influenza in the mothers, which is not completely satisfactory.

Text 2. URGE VACCINATION AGAINST «NEW FLU»

... Dr. Corey strongly recommends vaccination against the virus, though, especially for the people who run the highest risk of serious illness or complications from the disease. These include persons over the age of 65, especially those with chronic heart, lung, kidney, or metabolic disease such as diabetes mellitus.

«This group comprises approximately 45 million people in the United States,» he told MEDICAL NEWS. «There are usually only between 16 and 20 million doses of vaccine distributed each year. Of these, only about 9 million are estimated to be given to the highest risk group. So only one person in five in this group is being vaccinated».

Some people have asked whether present vaccines will work against the new strain of influenza. Dr. Corey said he expects the vaccine to be 70% to 80% effective, since it was developed to combat the «London Flu» which is a close relative of the Port Chalmers strain. In fact, CDC expects the Middle Atlantic states to see less of the disease than other areas, because the 1972—1973 outbreak was most severe along the East Coast.

UNIT 2

|        | 2. Many-Faced Viruses.  
| Word-Building Elements: Term-element 「hem (a)」. |

Pre-Text Assignments

1. Learn the following words and word combinations:

Pathogenicity [ˌpæθədʒˈnɪsɪti] болезнетворность, патогенность
The case under discussion demonstrates the pathogenicity of H-Influenzae type B in a nonimmune woman.

Empyema [ˌempəˈmiːə] скопление гноя в полости
The patient developed pericarditis empyema and thyroiditis after Influenzae.

Uptake [ˈɑːptɪk] поднятие, усвоение
Thyroidal uptake was normal and the patient was discharged from the hospital.

Friction rub [frɪkʃn rʌb] шум трения
Acute chest pain was accompanied by the pleural friction rub and increased dispnea.  

**Effusion** [ɪˈfjuːzn] выпот, излияние  
The X-ray examination revealed pleural and pericardial effusion

II. Analyze the following terms. Memorize the meaning of the term-element «hem»-  
«hem»- кровь, кровяной:

- hemanalysis, hemangioma, hematoid, hemapoiesis, hematometer,  
  hematologic, hematalscopy, hematology, hematotherapy, hematophilia, hematologist, hematose.

III. Match the following English word combinations with the Russian ones:

1. bactericidal antibody 1. чувствительная болезненность  
2. dysphagia and hoarseness 2. шум трения плевры  
3. distinct tenderness 3. бактерицидное антитело  
4. pleural friction rub 4. двухсторонний прокол стенки грудной клетки  
5. bilateral thoracocentesis 5. затруднение глотания и хрипота

IV. Find substitutes for the following word combinations:

1. puncture of the chest wall 1. exploration  
2. any act of investigation or research 2. effusion  
3. difficulty in swallowing 3. thoracocentesis  
4. escape of fluid into a body cavity 4. dysphagia  
5. the act of rubbing 5. friction

V. Translate the following sentences. Pay attention to the use and meaning of «due to»:

1. Meat poisoning is usually due to organisms of Salmonella group.  
2. Appendicitis is a bacterial infection due to streptococci, colon bacilli and other organisms.  
3. Early deaths are due to toxemia and less frequently to complicating infections.  
4. Deaths in the second or third week are due to myocarditis or other complicated infections.  
5. Pyloric obstruction due to scar tissues formation may occur and may be partial or complete.  
6. Air contamination due to motor exhausts is generally heaviest in the business and industrial districts.  
7. What were inflammatory processes after operations due to?  
8. Food poisoning may be due to a variety of causes, including the injection of organic and inorganic chemical substances as well as bacterial poisoning.

*HAEMOPHILUS INFLUENZAE PERICARDITIS AND EMPYEMA WITH THYROIDITIS IN AN ADULT*

Infection with Haemophilus influenzae type «B» in adults has been considered an unusual occurrence. This may be due to the presence of protective complement-dependent bactericidal antibodies against this organism in the adult population. However, the recent study by NORDEN et al has demonstrated that some healthy adults may lack any measurable bactericidal antibody and consequently may develop serious infections due to H-influenzae type «B».
The present case demonstrates the pathogenicity of H-influenzae type «B» in a nonimmune woman who developed pericarditis, empyema, and thyroiditis as a result of infection with this organism.

Report of a Case. A 26-year-old woman was admitted to Colorado General Hospital with a two-day history of severe sore throat, fever, dysphagia, and hoarseness. On physical examination the patient had a temperature of 40.1°C (104 F); respirations 28/min; pulse rate 130 beats per minute; and blood pressure 130/90 mm Hg. She appeared acutely ill, dyspneic, and anxious. No stridor was present. Results of funduscopic and pharyngeal examinations were normal. There was fullness and distinct tenderness over the right lobe of the thyroid gland and the left lobe was slightly tender. There was no erythema or increased warmth over the thyroid. Rhonchi were heard in both lungs. Results of cardiac, abdominal, and neurologic examinations were normal. On admission, the hematocrit reading was 40%, and the white blood cell (WBC) count was 8,500 /cu mm, with 66% segmented neutrophils and 21% band cells. Concentrations of serum electrolytes, blood urea nitrogen (BUN), creatinine, and serum immunoglobulins; results of protein electrophoresis, etc. were normal. An electrocardiogram was normal.

An initial diagnosis of subacute thyroiditis was made, and methylprednisolone sodium succinate, 40 mg. intravenously every six hours, was given, with improvement of neck pain. However, fever and dysphagia continued.

On the third hospital day, the patient developed acute pleuritic chest pain on the left side, accompanied by an increased temperature, a pleural friction rub, and increasing dyspnea due to hypoxemia. A chest X-ray film, however, was unchanged, and a lung scan could not be performed. Blood cultures were done at this time. The following morning, a paradoxical pulse of 20 mm Hg. was present, an ECG showed changes consistent with pericarditis, and a chest X-ray film showed an increase in heart size and new infiltrates in the right and left lower lobes of the lungs with pleural effusions. Ultra sound confirmed pericardial effusion. Pericardiocentesis and bilateral thoracentesis yielded frankly purulent fluid that demonstrated Gram-negative pleomorphic rods on Gram stain and eventually grew H-influenzae type B. Blood cultures grew the same organism. Bilateral chest tube drainage was instituted. The methylprednisolone therapy was discontinued, and cephalothin sodium (8 gm/24 hr), and chloramphenicol (7.2 gm/24 hr) was given because of a questionable history of penicillin allergy. This regimen was subsequently changed to ampicillin sodium (6 gm/24 hr), when it became apparent that she had recently taken penicillin without ill effect. Local surgical exploration of the pericardium showed it to be greatly thickened with only a small amount of fluid. A left pericardial window was created.

The patient's condition improved clinically over the next 48 hours with only minimal thyroid tenderness. But by the seventh hospital day, she continued to have a fever and paradoxical pulse of 15 mm Hg. On that day, exploratory thoracotomy was done with decortication of the right pleura and a pericardiectomy on the right. Gradual improvement
followed with return of temperature to normal, and the patient was discharged on the 38th hospital day.

Although subacute thyroiditis was suspected initially, the findings of a normal thyroid scan, thyroidal I uptake and normal serum thyroxine and elevated protein-bound iodine (8.9 mg/100 ml and 8.5 mg/100 ml) concentrations during the acute phase of the patient’s illness, coincident with definite clinical signs of thyroiditis and H-influenzae bacteremia, led to the eventual presumptive diagnosis of acute infectious (pyogenic) thyroiditis.

Post-Text Assignments

I. Skim through the text and find the key sentences. Translate the key sentences.

II. Read the preamble closely and memorize the three serious complications H-influenzae type «B» may lead to.

III. Read Report of a Case closely and answer the following questions:
1. With what symptoms was the woman admitted to the hospital?
2. What did the physical examination reveal? 3 What did the funduscopic examination show? 4. What did the examination of the thyroid reveal? 5. What was the condition of the lungs? 6. Where were serious abnormalities revealed? 7. What does the word «hematocrit» mean?
8. Were ECG findings normal? 9. What diagnosis was made? 10. What is thyroiditis treated with? 11. What treatment was administered?

IV. Read, translate and discuss:

MANY-FACED VIRUSES

The Soviet contribution to control of viral diseases is also notable. Not long ago polio still took a heavy toll among children, causing death or crippling them for life. Now the polio incidence is practically nil in the USSR. Progress has also been made in controlling measles, another wide-spread viral disease. An effective live vaccine has greatly reduced the incidence of measles and saved thousands of lives.

Virologists face many other problems, like influenza, hepatitis and chronic viral diseases. There are only a few methods of treatment and prevention, and it is necessary to study the mechanisms which underlie these diseases. Research along these lines is going on at the Institute of Virology of the USSR Academy of Medical Sciences and at several other research institutes.

Influenza continues to be a problem. Many scientists are working on it all over the world but it is a very elusive disease. Pandemics of influenza are caused by several variants of the virus and people who have developed immunity to one may be defenceless against others.

Specific vaccines to build up the immune system are of course the most effective prevention, and these have helped defeat several serious diseases and have reduced others to sporadic cases. Soviet scientists are studying the molecular structure and properties of influenza viruses which, unlike many other viruses have a very complicated structure. Our virologists have found new information on the molecular structure
of viral particles, the reproduction of the aggressive virus and its interaction with the cell. This is very important for preventing the disease and for making an effective vaccine.

V. Speak about the Soviet contribution to control of viral diseases.

VI. Read and translate without using a dictionary. Speak about the problem discussed:

SUMMARY

During the past ten years, subtotal thyroidectomy for hyperthyroidism was performed upon 43 children in Children Hospital of Los Angeles. There were no deaths, no recurrent laryngeal nerve injuries and no permanent hypoparathyroidism. During one to ten year follow-up period, one patient had recurrent hyperthyroidism develop and was treated. Twenty-five patients are hyperthyroidal and require thyroid supplement; 14 are unthyroid and receive no medication. Postoperative thyroid function did not correlate well with gland remnant size, degree of fibrosis or the extent of lymphoid follicle formation. Lymphocytic infiltration was more severe in patients who had hypothyroidism develop postoperatively. Transient hypocalcemia developed in 22 patients. The effectiveness and safety of the surgical treatment for hyperthyroidism in children is reaffirmed, and it is advocated for consideration over prolonged medical therapy.

VII. Compose a Case Report of a patient ill with Influenza.

VIII. Write a Summary of the reading material using the information you have got

UNIT 3

2. Case Reports.
Word-Building Elements: The prefix sub-.
Grammar: Tense-forms Passive.

Pre-Text Assignments

I. Learn the following words and word combinations:

Outbreak (of a disease) взрыв, вспышка (болезни)
Outbreaks of cholera were reported from 42 countries.
Distribution [,distri'breis] распространение
All the necessary medicines were dispatched to the centres of distribution. 
Abate [ə'beɪt] стихать, ослабевать
Many lives were saved, and in some areas the epidemics soon abated.
Resuscitation [,resas'tisneɪʃn] оживление
Investigations before resuscitation gave normal results.

II. Analyze the following words. Memorize the meaning of the prefix sub-

substernal, subconscious, subtotal, subsurface, subacute, subcutaneous, subclavian, subacid, subdental, subhepatic, subsoil, subpleural, subplant, submental, sublingual.
III. Match the following English word combinations with the Russian ones:

1. cholera outbreak 1. долгосрочный вклад
2. emergency assistance 2. распространение болезни
3. symptomless infection 3. вспышка холеры
4. spread of the disease 4. неотложная помощь
5. long-term investment 5. течение болезни без проявления симптомов

IV. Find substitutes for the following word combinations:

1. effecting a change 1. subtotal
2. in front of the mouth 2. substitute
3. the act of blocking or clogging 3. obstruction
4. the formation of bony tissue 4. osteosis
5. not quite total or complete 5. preoral

V. Define the tense-forms and Voice of the verbs in the following sentences. Translate the sentences:

1. The patient had been treated for pneumonia before entering the surgical department. 2. The lecture has just been finished and the professor has gone out from the lecture hall. 3. Have you already been operated upon for appendicitis? 4. The fractured bones of the extremities had been set and put in plaster of Paris. 5. In the dressing room the surgeon took out the stitches which had been put after the operation. 6. Great success has been achieved by Soviet surgeons in treating cancer.

VI. Transform into Passive making all the necessary changes:

1. The surgeon has set a fractured extremity. 2. The surgeon had lifted the stomach and explored the abdominal cavity. 3. The doctor had introduced antibiotics into the wound. 4. The nurse has prepared everything necessary for the operation. 5. This doctor has saved thousands of lives during his thirty years of work at the hospital.

CHOLERA OUTBREAK AND ITS CONTROL

In 1971, cholera became once again a dominant global public-health problem. A major epidemic occurred in India among the refugees from Bangladesh, and outbreaks of cholera were reported from forty-two countries. Fourteen countries in East and West Africa, in North Africa, in Arabian peninsula, and in Europe experienced the disease for the first time. There were some 150,000 reported cases of the disease—three times as many as in 1970. Emergency assistance was provided through the World Health Organization by a score of contributing countries. Supplies of rehydration fluid, antibiotics, bacteriological media, diagnostic antiseria, vaccine, and vaccination equipment were promptly dispatched to the centres of distribution. Many lives were saved, and in some areas the epidemics soon abated. The number of reported cases of cholera increased in 1972 to some 170,000, but this reflects improved epidemiological surveillance of the disease; about 100,000 cases were notified in fourteen countries of Asia and 70,000 cases in twenty-two
countries of Africa, and 121 cases of imported infection were recorded in several European countries. However, while the geographical spread of cholera was very wide, the size and severity of outbreaks had certainly decreased. The spread of this, the seventh, pandemic of cholera was largely due to the 'El Tor' biotype of Vibrio cholera, which causes many mild or symptomless infections.

The epidemic was controlled everywhere. Control of cholera depends on establishment and maintenance of a level of sanitation that prevent transmission of the pathogen. A safe piped water-supply, good methods of sewage disposal, improved housing conditions — all these are better long-term investments in health than any large-scale immunization programmes with the existing, not very satisfactory vaccines.

The question of removing cholera from the list of diseases covered by the International Health Regulations was discussed in 1977.

Post-Text Assignments

I. Skim through the text and define its main idea.

II. Write the key sentences out of the text and translate them.

III. Read the text closely in paragraphs and find the main subject of each paragraph, then answer the questions:

1. When did cholera become a global public health problem? 2. Where did a major epidemic occur? 3. How many countries reported about the outbreak of the disease? 4. Whom was emergency assistance provided by? 5. What medical equipment was dispatched to the centres of distribution? 6. What biotype caused the seventh pandemic of cholera? 7. Was the epidemic controlled everywhere? 8. What does the control of cholera depend on? 9. What are the better long-term investments in the health? 10. When and by whom was the question of removing cholera from the list of diseases discussed?

IV. Write a Summary of the text and discuss it with your fellow-students.

V. Complete the following sentences choosing the proper words from those given in the right column:

1. Control of cholera depends on the establishment of ... 1. abated
2. Good sanitary conditions prevent transmission of ... 2. distribution
3. Medical equipment was dispatched to the places of ... 3. dehydration
4. Many lives were saved and epidemics ... 4. pathogen
5. The woman had a dry skin and sunken eyeballs caused by ... 5. sanitation and hygiene

VI. Read and translate the following text without using a dictionary. Entitle the text:

We know that the human body has natural defences against the virus infection. The presence of an invading virus causes specific protein molecules, called antibodies, to be generated. These antibodies, circulating in the blood, attach themselves to the invading viruses they meet.
If enough of the antibodies are generated in time, the virus particles are completely surrounded and inactivated. They can no longer attach themselves to cells and can no longer multiply.

The human who successfully suppresses a virus infection in this way may show no symptoms of the infection and may not know that he has been infected. But thereafter he carries in his blood some antibodies which will help to suppress the next infection by a similar virus.

In countries where a particular virus disease is endemic many of the inhabitants will be immunized in this natural way, while other inhabitants and also travellers from other countries may be infected, and quickly show symptoms of the disease if they come into contact with it. Their natural generation of the specific antibody may be too slow to suppress the initial infection. So, if the disease is serious, those not naturally immunized will need to be immunized artificially.

Smallpox, an epidemic disease which spreads rapidly unless it is controlled, is endemic in only a few countries. An infected person may show no symptoms of smallpox during the incubation period of 8 to 14 days and yet may infect other people he meets. In the days of sea travel a case of smallpox would be diagnosed during a long voyage and appropriate isolation enforced to prevent further contact.

VII. Read, translate and discuss the following Case Reports:

Case I. A nine-year-old schoolgirl had had occasional abdominal pains for several years. These had been regarded as being mainly physiological in origin. On April 10, 1977, she was admitted to the hospital because of abdominal pains which lasted for a week. She also had a diarrhea and fever. On admission, she was tired and febrile but otherwise her general condition was good. The entire abdomen was tender, especially over the right iliac fossa. The rectal temperature was 39.5°C. The leucocyte-count was 12,200 per c. mm; otherwise all blood values were normal. The urine sediment was also normal. Acute appendicitis was suspected and she was admitted for observation. The following day her abdominal pains had subsided; the leucocyte-count was 9,600 per c. mm and the diarrhea had become worse. The patient was transferred to a medical ward B.

Case II. A woman of 71, who had been an outpatient for 11 years, was referred to the Fairhurst unit, the general medical ward of Prestwich Hospital, with a history of profuse watery diarrhea and vomiting for three days. She had a history of an abdominal operation for intestinal obstruction followed by prolonged antituberculosis therapy. She was severely dehydrated, with dry skin and sunken eyeballs. Blood pressure was undertaken with intravenous fluids and hydrocortisone and, six hours and 10 litres of intravenous fluids later, she improved, blood pressure rising to 100/70 mm Hg and pulse-rate to 96. Investigations before resuscitation showed a hemoglobin of 17 g. per 100 ml, white cells 3600 per c. mm, blood-urea 246 mg. per 100 ml, blood-Ph 7.37°, blood PCO₂ 92 and blood PO₂ 25 mm Hg. Urinary output in the first 24 hours was nil. She made uneventful recovery on parenteral fluids, and antibiotics, but her stools are still positive for salmonella.
UNIT 4

Texts: 1. Smallpox Control in Great Britain.  
2. Smallpox Vaccine.  
Word-Building Elements: Term-element «hydro».  

Pre-Text Assignments

1. Learn the following words and word combinations:

Medical officer медицинский работник  
Each area or district in America has its own medical officer.  
Practitioner [prækˈtɪʃnə] практикующий врач  
Revaccination must be recommended to all practitioners and hospital staffs.  
Purpura ['pɜːpjuərə] пурпур  
One must remember about the importance of purpura and hemorrhage in the diagnosis of smallpox.  
Vital [vətəl] жизненный, важный  
If an outbreak of smallpox follows the first case, the medical officer must know that time spent at the beginning of unhurried planning is vital.

II. Analyze the following words. Memorize the meaning of the term-element «hydr-» - вода. Define the part of speech and translate:

hydronephrosis, hydropathy, hydrophilic, hydrophoby, hydroiodic, hydrolysis, hydrolyze, hydromel, hydrophilous, hydropsy, hydroplasma.

III. Match the following English word combinations with the Russian ones:

1. precise information 1. полностью занятый  
2. fully occupied 2. под строгим надзором  
3. germicidal solution 3. предупредить распространение инфекции  
4. under strict surveillance 4. бактерицидный раствор  
5. forestall the spread of infection 5. точная информация  

IV. Find substitutes for the following word combinations:

1. readily absorbing moisture 1. hydrocyst  
2. a morbid condition of the blood 2. pericarditis  
3. any blood producing substance 3. hydroscopic  
4. inflammation of tissues around the pericardium 4. septicemia  
5. cyst with watery contents 5. hematogen  

V. Read and translate the following sentences. Pay attention to the means of expression of modality:

1. When speaking of immunity we must remember that this refers particularly to resistance against poisons, foreign proteins, and invading germs. 2. One should be very careful in handling burned surfaces. 3. You should remember that most of the viruses are destroyed at the temperature of 50—60° within 30—60 minutes. 4. The professor is
to perform the operation himself. 5. Attention must be paid to the type of rash, its colour and distribution. 6. After the onset of a heart disease one must keep a strict bed regime. 7. Since the rash is such an important diagnostic sign its examination should be carried out carefully.

SMALLPOX CONTROL IN GREAT BRITAIN

When smallpox is confirmed in his area, the medical officer of health must ensure that everyone likely to be involved is made aware of the situation, and protected against the disease. He should inform at an early stage the Department of Health and Social Security, the regional hospital board, neighbouring medical officers of health, practitioners and hospital staff should include a reminder about the importance of purpura and hemorrhage in the diagnosis of smallpox and of the various ways in which vaccination can modify the disease. He should also give precise information about laboratory diagnosis, and the facilities available locally. Every detail regarding the transport and reception of patients into the designated smallpox hospital must be agreed with the infectious disease consultant responsible, and policy regarding disinfection settled at the onset. Revaccination of all public-health staff, including ambulance personnel, should be arranged at once, and recommended to all practitioners and hospital staffs. If an outbreak of smallpox follows the first case, the medical officer of health will be fully occupied: time spent at the beginning of unhurried planning is vital.

The Patient. The patient must be isolated as soon as this can be safely arranged. In any local-authority smallpox-control plan there should be at least one smallpox practice every year for ambulancemen designated for this role. Where the diagnosis is in doubt, it may be wise to keep the patient at home, under strict surveillance, while electron-microscopy and gel-infusion tests are carried out. The epidemiological situation is not made worse and may even be improved by a few hour’s thoughtful delay. The patient will not spread infection during that time, but the moment he is moved, he may. It is too often assumed that the patient must be quickly moved to hospital at all costs. It must be remembered that a smallpox hospital will need to be reopened, staffed, and provisioned. Many such hospitals have only 'care-and-maintenance' staff of a caretaker and his family, and may have been closed for years.

If the case arises in a hospital ward, or in someone reaching Britain by sea or air, the need to remove the patient can be urgent; but there are epidemiological hazards in the transport of a smallpox patient, and time must always be spent making certain that every precaution will be taken on the way.

It cannot be stressed too strongly that the medical officer of health must be brought into the clinical picture as soon as possible, as it is he who is responsible for the epidemiological control of the disease. At the onset he will want to look both backwards and forwards into the patient’s history: backwards to try to establish the source of his infection, and forwards to try to forestall the spread of infection. In both directions the search must be detailed and, from the clinical point of view, based

175
again and again on the 'atypical' manifestations of the disease in its hemorrhagic or its modified form. He must examine the records of recent deaths ascribed to leukemia or purpura or meningococcal septicemia; he must be on the look-out for rashes diagnosed as chickenpox or heat-spots, or overlooked altogether. The patient's every movement at the relevant times must be accounted for, and everything traced that has passed from him at those times, be it laundry or letters or perhaps money.

The Contacts. In smallpox, there are always two grades of contacts. Direct contacts are people known to have been near a patient suffering from smallpox, and, therefore, possibly exposed to the virus; indirect contacts have not been close to the patient, but have moved in the same general environment, such as a large hospital or factory, or they may be contacts of contacts. Such indirect contacts must usually be offered protection by vaccination and, according to the exact circumstances, they may require to be kept under surveillance. They form an outer ring in the defences to be built round the case. Direct contacts form the inner ring and they require rigorous clinical supervision. They must be vaccinated the moment their contact is established, and this should be supplemented by the use of human antivaccinia immunoglobulin. Their surveillance should be carried out, at least towards the end of the incubation period, by a doctor well aware of the modifying influence of vaccination on smallpox. It is an advantage if really dangerous contacts can be isolated for the last few days of the incubation period, so that if they do develop the disease they can harm no one else. It is essential at this stage of surveillance that the patient be stripped once daily, and every area of his skin searched for suspicious spots.

Post-Text Assignments

I. Skim through the text and define its main idea. Write the key sentences out of the text and translate them.

II. Read the text and translate it.

III. Read the first paragraph of the text and speak about the duty of a medical officer of health.

IV. Read the text under the title «The Patient» and speak about the smallpox-control plan.

V. Read the text under the title «The Contacts» and answer the following questions:


VI. Read, translate and discuss the following text:

SMALLPOX VACCINE

Smallpox (variola major) is a serious and frequently fatal disease caused by the virus variola. This virus has, since the eighteenth century, been prepared for administration to man by passing it through calves which causes attenuation (cowpox). The calf lymph is obtained on about
the seventh day after the inoculation and is treated with glycerin as a preservative and antibacterial agent. After standing for four to six weeks, if free of bacteria, it is ready for use. Cowpox vaccine is called vaccinia, hence the name «vaccination». Calf lymph virus vaccine will soon be replaced by the new vaccine made from virus grown in the allantoic sac of hen eggs. Successful vaccination against smallpox provides adequate protection within eight days, lasting for several years with gradual decrease of immunity.

Infants should be vaccinated before six months of age and before entering school. Vaccination should be repeated before or following known or possible exposure to smallpox. The deltoid muscle prominence of the upper arm is usually used for vaccination in boys and men, and the lateral portion of the thigh in girls and women.

Technique. One drop of smallpox vaccine is placed on the skin which has been cleansed with alcohol and allowed to dry. No germicidal solution should be used, for the virus may be inactivated thereby. A sterile solid needle is supplied for use in pressing the skin, held stretched with one hand, where the vaccine has been placed. The needle is held almost parallel to the skin and pressure is exerted repeatedly and rapidly with sufficient force as to cause minute ruptures of the skin but not bleeding. This constitutes the multiple pressure method and is the preferable one. Alternate techniques are the making of several actual scratches and the acupuncture method whereby a vertically held needle is plunged against the skin ten to 15 times. The vaccine should not be covered with a shield or bandage.

Reactions. If a potent vaccine is properly administered, one of three types of local reactions should occur: 1) primary or vaccinia reaction, usually seen when there has been no previous vaccination, or when the immunity from a previous «take» has been largely lost. A papule appears on the third to the fifth day, which soon contains a fluid (vesicle formation) and is surrounded by a red zone called the areola. The lesion grows larger for one or two weeks, the top of the vesicle disintegrates, and an open ulcerated and weeping area exists until a crust forms. The latter becomes detached after the third week leaving a pink scar which becomes white and irregular over a period of two years. 2) Accelerated or vaccinoid reaction, a mild reaction occurring a bit earlier, reaching a maximum size within a week, and subsiding perhaps within two weeks. This modification of the vaccination results from partial immunity still existing from a previous vaccination. 3) Immune reaction or «early response. This is a still milder reaction occurring within a few hours and becoming maximum within ten to 72 hours. It may represent merely a sensitivity to previously administered virus and may not indicate immunity. It should be considered the latter only if the vaccine employed is known to be potent and if the inoculation technique was proper. If the skin is not broken sufficiently for introducing the virus successfully, no reaction may occur, in which case the procedure should be repeated.

The vaccination site should be examined on three occasions: 1) on the second or third day for detecting an early reaction; 2) on the fifth
to seventh day for noting accelerated or vaccinoid reaction; 3) on the eighth or ninth day for observing a primary reaction or «take». Several mild to severe complications may infrequently follow smallpox vaccination, including lesions, secondary bacterial infections, gangrene at the site of inoculation, generalized vaccine eruptions, spread of the lesion to adjacent skin, and, rarely, vaccinia encephalitis. These may be reduced in severity by the use of vaccinal gamma globulin.

Smallpox vaccine is available in packages containing individual doses in sealed capillary tubes and a like number of sterile needles similarly sealed. A small rubber bulb is included for expressing the vaccine. Sterile precautions must be taken, following package instructions.

VII. Speak about the preparation of smallpox vaccine using the information you have obtained from the text.

VIII. Describe the technique of vaccination.

IX. Translate the following sentences. Pay attention to the use of the verb «should»:

1. In a local authority smallpox-control plan there should be at least one smallpox practice every year for ambulance men designated for this role. 2. The health officer should inform at an early stage the Department of Health and Social Security, the regional hospital board, neighbouring medical officers of health, practitioners and hospital staff should include a reminder about the importance of purpura and hemorrhage in the diagnosis of the disease. 3. He should also give precise information about laboratory diagnosis, and the facilities available locally. 4. Revaccination of all public-health staff should be arranged at once, and recommended to all practitioners and hospital staffs.

X. Write a Summary of the reading material.

UNIT 5

       2. Scarlet Fever.

Word-Building Elements: The prefix peri-

Pre-Text Assignments

I. Learn the following words and word combinations:

Infected droplet зараженная воздушная капелька
Measles is spread by infected droplets from the nose and throat.
Desquamation [ˌdeskwaˈmeɪʃn] шелушение
After the disappearance of the rash desquamation begins.
Sporadic [ˈspɔɹədɪk] единичный, случайный
Special vaccines to build up the immune system are of course the most effective prevention, and these have helped to defeat several serious diseases and have reduced others to sporadic cases.
Viral [ˈvaɪrəl] вирусный
Soviet virologists study the properties of viral particles.
Interaction [ˌɪntəˈækʃn] взаимодействие

The study of reproduction of viruses and their interaction with the cells is very important in combatting the infection.

II. Form new words adding the prefix peri-. Memorize the meaning of the prefix peri-.
Translate the words:

Model: uterine — periuterine окружающий матку
arterial, anal, arthritic, articular, axillary, colic, cranial, dental, oral, osteal, vascular, tonsillar, nephritis.

III. Match the following English word combinations with the Russian ones:
1. contagious disease 1. слизистая оболочка
2. punctate eruption 2. заразная болезнь
3. mucous membrane 3. начало явлений
4. beginning of desquamation 4. точечная сыпь
5. proper treatment 5. правильное лечение

IV. Find substitutes for the following word combinations:
1. around the anus 1. periencephalitis
2. separating scales from any surface 2. perianal
3. occurring here and there 3. purulent
4. containing or consisting of pus 4. desquamation
5. inflammation of the surface of the brain 5. sporadic

V. Put in the missing words from those given in the right column:
1. The smallpox patient must be ... as soon as possible 1. epidemiological control
2. When the diagnosis is in doubt the patient must be kept at home under ... 2. strict surveillance
3. The health officer must make certain that every ... is taken on the way. 3. established
4. The patient must be vaccinated the moment his contact is ... 4. precaution
5. The medical officer is the one who is responsible for the ... of the disease. 5. isolated

MEASLES

Measles is one of the most communicable and widespread diseases of childhood. All the parents must know that measles is a very grave disease which is dangerous for children especially for young ones. The disease is spread by infected droplets from the nose and throat, sneezed or coughed into the air.

There is an incubation period of 10—19 days. The prodromal symptoms are fever, cough and sneezing. With the appearance of these symptoms the parents must put the child into bed and call a doctor in. The disease is characterized by a rash which at first appears on the mucous membrane of the mouth known as Filatov-Koplik’s spots. On the 4th day this rash appears on the skin, at first behind the ears, then on the face, body and limbs. The patient begins to feel much worse. The cough
and cold in the head become aggravated, the eyes get purulent. A child easily contracts measles after being exposed to it for a short period of time. In this case the child must be immediately vaccinated.

After the disappearance of the rash desquamation begins. If the disease is not complicated the patient recovers quickly. Proper treatment and good nursing may prevent complications. The patient's room must be aired as often as possible, because fresh air protects from pneumonia and other complications, and it must be cleaned with a wet duster.

The patient's bed must be placed so that the day light should not fall on his face, but the room must be never darkened because the sun rays kill bacteria.

It is necessary to keep the patient's mouth in the cleanliness. For this purpose the patient should rinse his mouth after meal. Little children must drink boiled water instead of rinsing. As the sick child has poor appetite he should take soft diet in small amounts 5—6 times a day.

The patient's hands must often be washed and he must not be allowed to rub his eyes. It is good to wash out his eyes with solution of boric acid several times a day.

It is necessary to isolate the sick child from healthy children. When it is impossible for the child to have a proper nursing at home, he should be taken to the hospital where there are proper conditions to quicken his recovery.

Post-Text Assignments

I. Skim through the text and define its main idea.
II. Write the key sentences out of the text and translate them.
III. Read the text closely and answer the following questions:

IV. Read, translate and retell the following text:

SCARLET FEVER

Scarlet Fever is an acute contagious disease, characterized by high temperature, rapid pulse, a punctate eruption followed by desquamation, inflammation of the throat.

The disease may be transmitted from a person affected with the disease to a healthy individual either by contact through various objects — clothing, toys, books and foodstuffs, infected by the patient or by means of droplet infection (during coughing, sneezing or talking).

All children are susceptible to the disease, particularly frequently between 18 months and 10 years of age. Adults also contract this illness
in whom the course of the disease may simulate that of a sore throat without the eruption characteristic of scarlet fever.

The incubation period of the disease lasts an average of 4—7 days. Sometimes it takes only some hours.

The onset of the disease is sudden. There is generally a severe sore throat, a sharp rise of temperature to 39—40°, nausea, vomiting, headache and often chills. The lymphatic nodes of the neck are enlarged. The child is restless and sleeps badly.

Within a few hours, but more often at the end of the first or at the beginning of the second day a diffuse red rash appears on the neck, chest and back, spreading to the arms and legs. The rash lasts one or three days and then falls away.

After the disappearance of the rash the period of desquamation begins. Desquamation continues 10—14 days.

Scarlet fever patients should be isolated. If no complications develop and the patient feels well he is allowed out of the bed after the seventh day of the disease. He may be discharged from the hospital on the 12th day after the onset of the disease.

The principal complications are: acute nephritis, adenitis, otitis media, pericarditis, endocarditis, etc.

As to the treatment, isolation, rest and careful disinfection of the patient’s articles are of importance.

V. Speak about the clinical manifestations of scarlet fever using the key words and sentences of the text.

VI. Write out the sentences dealing with the treatment of scarlet fever.

VII. Speak about the most serious complications after scarlet fever.

UNIT 6

Texts: 1. Types of Immunity.
2. Classes of Vaccines.

Word-Building Elements: The prefixes un- and non-

Pre-Text Assignments

I. Learn the following words and word combinations:

Immunity [ɪˈmjuːnəti] иммунитет
Man has natural immunity to some diseases.

Exhibit [ɪɡˈzɪbɪt] проявлять, показывать
Certain individuals exposed to an infectious agent may fail to contact the disease or to exhibit as severe the case as others.

Inherited [ɪnˈhɜːrɪtɪd] унаследованный
Certain types of resistance are inherited by the individuals possessing them.

Inborn [ˈɪnˈbɔːn] врожденный

Inborn resistance врожденная устойчивость

Various types of inborn, inherent resistance may be termed natural immunity.
Miscellaneous [ˌmɪsɪˈleɪnɪəs] смешанный, разнообразный
Antigens may also come from animals, plants, foods, and miscellaneous materials.

II. Form new words adding the prefixes un- or non-. Translate the words:

Model: armed — unarmed невооруженный
natural — unnatural неестественный
infective — noninfective неинфекционный
affected, altered, anesthetized, broken, complicated, conditioned, conscious, contaminated, cured, delivered, cooled, crystallized, infected, absorbed, immune.

III. Analyze the structure of the following terms:
immunization, antiserum, anaphylaxis, anaphylactoid, rickettsial, attenuation, fertile, disintegration, agglutinate, neutralize.

IV. Match the following English word combinations with the Russian ones:

1. harmless toxoid 1. редкое исключение
2. rare exception 2. токсическое действие
3. toxic effect 3. активная иммунизация
4. active immunization 4. аллергическая реакция
5. allergic reaction 5. безвредный токсоид

V. Find substitutes for the following word combinations:

1. a specific substance produced in the organism as a reaction to the presence of an antigen 1. toxoid
2. counteracting anemia 2. antibody
3. altered toxin 3. antibacterial
4. useful in curing or preventing the action of harmful bacteria 4. refrigeration
5. therapeutic application of low temperature 5. antianemic

VI. Put in the missing words from those given in the right column:

1. Some medical preparations are kept under... 1. neutralized
2. Vaccines are injected or ingested for the production of active...
3. Toxins may be ... and made inert.
4. One molecule of ... combines with one molecule of antibody.
5. Acquired immunity may come about through... natural processes which may follow ... to the infectious agent.

VII. Form new words by adding the prefixes. Define the part of speech and translate them:

a) dis-: colouration, continue, like, appear.
b) un-: natural, cured, cooled, conscious, treated.
c) over-: use, strain, work, eating, dosage.
d) intra-: venous, muscular, cellular, vascular.
TYPES OF IMMUNITY

Natural Immunity. Man is susceptible to infection only by certain microorganisms present in the world and has a species immunity to others that attack animals and other forms of life. Some races of men are less susceptible to certain specific infectious agents than others; for example, Caucasians, exposed to tuberculosis for many centuries, are appreciably more resistant to the disease than Afro-Americans and American Indians. This is an example of partial racial immunity. In addition, certain individuals exposed to an infectious agent, even in an epidemic or endemic, may fail to contract the disease or to exhibit as severe a case as others. Thus, there is an individual immunity to many diseases affecting man. These various types of inherent, inborn resistance may be termed natural immunity. They are inherited by the individuals possessing them. When natural immunity is present, the tissues and circulating blood of the host or the intended host are not conductive to successful invasion by the infectious agent, or to the same degree as those of another host.

Acquired Immunity. In addition to any natural resistance to specific diseases which individuals may possess, they may acquire partial or complete protection against certain infectious disease. Such acquired immunity may come about through natural processes which may follow exposure to the infectious agent, whether overt disease accompanies the exposure or not. As a result of the subclinical or overt disease, substances may be produced within the body that can repel or moderate a subsequent attempted invasion by the same organism. Some of these substances may remain upon or within the wall of certain cells, and others may circulate in the tissue fluids and plasma.

They can be demonstrated in the serum after clotting separation of the serum from the contracted clot. They are known as antibodies, materials which are usually highly specific against invading organisms or their products. Antibodies are proteins made by certain cells of the host in response to the presence of foreign substances known as antigens. The latter may be the invading agents of infectious disease or chemicals derived from them. Antigens may also come from animals, plants, foods, and miscellaneous materials.

Passive Immunity. The antibodies against infectious agents produced by some individuals or by animals may be concentrated and administered to patients for combatting an infection. The use of antibodies constitutes passive immunization wherein the protective material, specific for a given infectious agent or group of closely related agents, is produced in another individual or animal and given thus «ready-made» to the patient.

Antiserum. The protective antibodies explained above in most cases are present in the serum of the animal or person who has produced them. Animals are repeatedly given small or increasing amounts of the particular antigen or infectious agent whereupon they may develop considerable quantities of antibodies, usually antitoxins. Administration of these antibodies in antiserum provides immediate passive immunity in
various diseases. They may abruptly improve the course of the disease process. They may also cause undesirable reactions such as allergic responses, anaphylaxis, anaphylactoid reactions, and serum sickness, to be described. In most cases the antibodies administered in antisera do not reside indefinitely in the recipient, or even for a year in some. The protection is temporary, often lasting for only a few months. The antibodies gradually lose their original potency by chemical changes in the new host. The chief advantage of antisera, therefore, is the provision of immediate and, with sufficient dosage, quite high protection to a patient exposed to or already having a serious infection. Antisera are not available for all diseases, however.

**Active Immunity.** A person may be caused to develop his own antibodies rather than receive them in antisera. For the development of such active immunity the antigens are injected into the subject. These antigens are either vaccines or toxoids.

**Vaccines.** Vaccines are suspensions of the infectious agents themselves that have been rendered incapable of multiplying in the host, or at least of causing the complete disease. They may be viruses, bacteria, or rickettsiae, treated in ways that render them safe and virtually harmless, yet allow them to serve as antigens and cause the active production of protective antibodies by the vaccinated individual. The latter thereby becomes resistant, partially or completely, to that disease in the event of subsequent exposure to its normally virulent, causative agent.

The disease agents used in vaccines have been made safe by exposing them to certain chemicals or by a process of attenuation. In this process, the infectious agents are allowed to grow on unnatural substances—in unnatural animal species, or in fertile incubated fowl eggs or embryos. Sometimes a small amount of the progeny of the agent is repeatedly removed from such environment and reinoculated into a new egg, animal or other host. In some cases, such passage through dozens of abnormal hosts results in substantial decrease in virulence, to the point of producing no disease, or an extremely mild case, when the agent is finally harvested and administered to the person in whom immunization is to be produced.

**Toxoids.** Toxoids are altered toxins, the chemical materials poisonous to animals or man excreted by certain infectious agents or present in the microorganisms and released upon their death and disintegration. The excreted substances are known as exotoxins and the intracellular ones, endotoxins. Some toxins are extremely potent, minute amounts being capable of causing death. Active immunization against such powerful toxins would be laborious and could be dangerous if they were injected as antigens. Many such toxins can be altered chemically with reduction or abolition of their capability of causing toxic reactions, yet with preservation of their capacity to cause the body tissues to produce antitoxin against the original toxin. A widely used method of converting a dead toxin into a virtually harmless toxoid is the treatment of the toxin with Formalin. The protein of the toxin molecule is thereby denatured, or chemically altered in part so that it no longer can behave as it could originally. The toxoid can then be safely given, with rare
exceptions, by injection on one or more occasions, with the gradual
development of antitoxin in the tissues and blood of the person to be
made resistant or immune to the specific disease or to its toxic effects.

Active immunization by the use of vaccines or toxoids requires a
few weeks or months, depending upon the particular disease, because the
host tissues must produce their own antibodies. However, these anti-
bodies and antitoxins remain in the blood and tissues much longer
when synthesized by those tissues than when injected premade by an
animal (passive immunization). Allergic reactions related to the injec-
tion of small amounts of blood protein from the donor animal are avoid-
ed in direct, active immunization.

When an individual is injected by or exposed to an agent against
which he has been immunized, his antibodies and the specific antigens
which caused their production meet in the blood, the tissue fluids or
on tissue cell surfaces. One molecule of antigen combines with one mo-
lecule of antibody. An antibody usually will not react with an antigen
of a different type. The affinity is so specific that it may be considered
much as a lock and key for precision matching. The result of the antigen —
antibody reaction is the neutralization of the antigen. It cannot then
exert its toxic effect. Bacteria or viruses may thus be agglutinated,
destroyed, or otherwise prevented from causing the usual damage. To-
oxins may be neutralized and made inert.

Summary. Vaccines consisting of weakened or killed infectious agents,
viruses or bacteria, may be injected or ingested for the production of
active immunity. Several doses of weekly to monthly intervals are often
required for the production of adequate protection. Antibodies are thus
produced which can react with the original agent and render it ineffect-
ive for causing disease, or prevent the usual severity of infection. Toxoids,
the safe, altered toxins of infectious agents, may be similarly used for
the production of antitoxins in a subject who then develops active immu-
nity against the specific toxin used.

Such antibodies or antitoxins can be derived from other individuals
or from animals and administered to a subject for the establishment of
immediate passive immunity. Materials of these types, including serum
products and vaccines, are often called biologicals. These medical pro-
ducts must be kept under refrigeration at temperatures specified on
their containers. This information and expiration dates are stamped
upon cartons and labels as required by law.

Post-Text Assignments

I. Skim through the text and define its main subject. Write the key sentences out and
translate them.

II. Read the part of the text dealing with natural immunity. Speak about the types
of natural immunity.

III. Read and translate that paragraph of the text which describes acquired immunity.
Put questions to the paragraph.

IV. Read "Passive Immunity" closely and find the key sentences.
V. Read and translate the text under the title of «Antiserum». Answer the following questions:


VI. Read and retell the part of the text dealing with vaccines and toxoids.

VII. Write all the medical terms concerning immunity out of the text and learn them.

VIII. Discuss the Summary of the text.

IX. Read and translate the following text without using a dictionary:

**CLASSES OF VACCINES**

Vaccines are made in three general classes: 1) those with living organisms; 2) those with killed bacteria; 3) those with the toxins or other products that bacteria throw off during growth. An example of the first class is smallpox vaccine in which the living virus is used. Examples of the second class are vaccines used to protect human beings against typhoid fever, rabies (hydrophobia), and whooping cough. Vaccines of this class are used also in preventing several other diseases including cholera, dysentery, undulant fever, and plague. In the third class comes toxoid, used in the prevention of diphtheria and tetanus.

Vaccination and immunization make a fatal outcome less likely in the event of the specific disease being acquired, but do not absolutely prevent the incidence of the disease. If a vaccinated or immunized person absorbs an overwhelming number of germs, he may become slightly infected. But the likelihood of contagion is reduced to a minimum. When speaking of immunity, which means the state of being resistant, we must remember that this refers particularly to resistance against poisons, foreign proteins, and invading germs. Such resistance may be due in specific instances to the presence in the blood of antibodies, such as: 1) antitoxins, which counteract bacterial toxins; 2) precipitans, which render a foreign protein insoluble.

The study of immunity to diseases is called immunology. It includes: 1) immunity to microbic diseases; 2) serology; 3) immunologic diseases.

X. Speak about the classes of vaccines and their use in preventing infectious diseases.

XI. Discuss the problem of vaccination and immunization using the information obtained from the reading material of the unit.

XII. Make up a plan of the reading material given below;
USE OF VACCINATING

Our body cells, on the whole, respond to the different poisons and other microbial products by manufacturing substances that neutralize these poisons and other products. These neutralizing substances are called antibodies; the poisons and other products stimulating the production of antibodies are called antigens. Antigens of harmful germs that are injected into animals for the express purpose of stimulating the production of antibodies that may help cure or prevent disease are called vaccines, because they are used for the same purpose as was the first vaccine made from cowpox virus.

If we should stop use of all vaccines and serums now, how much could we do to prevent infectious diseases by other hygienic methods alone? We can answer that if such hygienic methods were strictly carried out, most infectious diseases would be prevented. Why, then, you may ask, are not such measures employed? We answer, because it is a practical impossibility to carry out all of these measures.

Let us consider this. We know that microbes that are pathogenic for human beings may be conveyed through human or lower animal carriers, who may be normal, diseased or convalescent; we know that the germs may pass to another, directly, through fine droplets of sputum sputtered out from the mouth in talking or coughing, or from the nose in sneezing, or through the hands or other parts of the body contaminated with or containing the infectious germs; or they may pass indirectly by any utensils coming in contact with these infectious parts of the carrier. Food handlers in the picking, packing and transportation industries contribute to the bacterial content. Then there are the dust and filth from flies and other vermin and lower animals. To prevent infection from such carriers means that all human beings must wear masks, that their hands and their excreta must be thoroughly sterilized; it means that in insect-borne diseases the insect carriers—mosquitoes, flies, fleas, ticks—must be destroyed; it means that in diseases carried by other animals, like rabies, transmitted by stray dogs, these animals must be destroyed.

One can realize after a moment's thought how impracticable, even impossible, it would be to carry out measures that would absolutely rid us of all sources of infection. The whole question of the use of hygienic measures, including the so-called sanitary procedures, is one of adjusting the measures needed to destroy all dangerous germs to the measures that can be practically applied.

Even if we could rid all carriers and their surroundings of all pathogenic germs, at a special time in a special neighborhood, would it be desirable? How would nature respond to this state of things? Antibodies would cease to be formed in these people. The people, or at any rate their descendants, might become fully susceptible to disease germs. If they went to another part of the world where such microbes still existed or if a carrier visited them they could be easily attacked.
There was a tragic illustration of this in the First World War when American troops came in from country places where they had not been exposed to measles. Epidemics of measles broke out in the various camps, attacking chiefly these country boys. They developed the disease in very severe form and many contracted a complicating pneumonia, resulting in a high mortality.

These tragic incidents show us that if we cannot have complete hygienic protective measures, and if we have no vaccines, we are bound to have more or less widespread fatal epidemics of certain diseases that we now prevent by vaccines.
## SUPPLEMENT I

### LATIN AND GREEK TERMS USED IN ENGLISH

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>adenoma</td>
<td>adenomata</td>
<td>опухоль железа, аденома</td>
</tr>
<tr>
<td>albicans</td>
<td>albicantia</td>
<td>белеющий</td>
</tr>
<tr>
<td>amygdala</td>
<td>amygdalae</td>
<td>миндаль</td>
</tr>
<tr>
<td>antrum</td>
<td>antra</td>
<td>пазуха</td>
</tr>
<tr>
<td>apex</td>
<td>apices</td>
<td>верхушка</td>
</tr>
<tr>
<td>apparatus</td>
<td>apparatus</td>
<td>аппарат</td>
</tr>
<tr>
<td>appendix</td>
<td>appendices</td>
<td>аппендикус</td>
</tr>
<tr>
<td>aqua</td>
<td>aequae</td>
<td>вода</td>
</tr>
<tr>
<td>ascaris</td>
<td>ascarides</td>
<td>аскарида</td>
</tr>
<tr>
<td>atrium</td>
<td>atria</td>
<td>предсердие</td>
</tr>
<tr>
<td>axis</td>
<td>axes</td>
<td>ось, второй шейный позвонок</td>
</tr>
<tr>
<td>bacillus</td>
<td>bacilli</td>
<td>бацилла</td>
</tr>
<tr>
<td>bacterium</td>
<td>bacteria</td>
<td>микроф, бактерия</td>
</tr>
<tr>
<td>basis</td>
<td>bases</td>
<td>основа, основание</td>
</tr>
<tr>
<td>bronchus</td>
<td>bronchi</td>
<td>бронх</td>
</tr>
<tr>
<td>cadaver</td>
<td>cadaveria</td>
<td>труп</td>
</tr>
<tr>
<td>calculus</td>
<td>calculi</td>
<td>камень (желчный)</td>
</tr>
<tr>
<td>corpus</td>
<td>corpora</td>
<td>тело</td>
</tr>
<tr>
<td>crisis</td>
<td>crises</td>
<td>кризис</td>
</tr>
<tr>
<td>criterion</td>
<td>criteria</td>
<td>мера, критерий</td>
</tr>
<tr>
<td>cuniculus</td>
<td>cuniculi</td>
<td>борозда головного мозга</td>
</tr>
<tr>
<td>datum</td>
<td>data</td>
<td>данные</td>
</tr>
<tr>
<td>diagnosis</td>
<td>diagnoses</td>
<td>диагноз</td>
</tr>
<tr>
<td>digitus</td>
<td>digiti</td>
<td>палец</td>
</tr>
<tr>
<td>dorsum</td>
<td>dorsi</td>
<td>спина, тыл</td>
</tr>
<tr>
<td>fibroma</td>
<td>fibromata</td>
<td>фиброма</td>
</tr>
<tr>
<td>focus</td>
<td>foci</td>
<td>очаг, фокус</td>
</tr>
<tr>
<td>fossa</td>
<td>fossae</td>
<td>углубление, впадина</td>
</tr>
<tr>
<td>genus</td>
<td>genera</td>
<td>род, вид</td>
</tr>
<tr>
<td>gonococcus</td>
<td>gonococci</td>
<td>гонококк</td>
</tr>
<tr>
<td>ileum</td>
<td>ilea</td>
<td>подвздошная кишка</td>
</tr>
<tr>
<td>medium</td>
<td>media</td>
<td>середина</td>
</tr>
<tr>
<td>mucosa</td>
<td>mucosae</td>
<td>слизистая оболочка, мукоза</td>
</tr>
<tr>
<td>nodus</td>
<td>nidi</td>
<td>узел</td>
</tr>
<tr>
<td>noxa.</td>
<td>noxae</td>
<td>патогенный фактор</td>
</tr>
<tr>
<td>os</td>
<td>ora</td>
<td>рот</td>
</tr>
<tr>
<td>os</td>
<td>ossa</td>
<td>кость</td>
</tr>
<tr>
<td>Latin</td>
<td>Latin</td>
<td>Russian</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>papilla</td>
<td>papillae</td>
<td>сосок, сосочек</td>
</tr>
<tr>
<td>pathema</td>
<td>pathemata</td>
<td>болезнь</td>
</tr>
<tr>
<td>pes</td>
<td>pedes</td>
<td>нога, стопа</td>
</tr>
<tr>
<td>phenomenon</td>
<td>phenomena</td>
<td>явление, симптом</td>
</tr>
<tr>
<td>polypus</td>
<td>polypi</td>
<td>полип</td>
</tr>
<tr>
<td>septum</td>
<td>septa</td>
<td>перегородка</td>
</tr>
<tr>
<td>spasmus</td>
<td>spasmi</td>
<td>спазм</td>
</tr>
<tr>
<td>sperma</td>
<td>spermata</td>
<td>sperma</td>
</tr>
<tr>
<td>stoma</td>
<td>stomata</td>
<td>рот</td>
</tr>
<tr>
<td>tarsus</td>
<td>tarsi</td>
<td>предплосна, хрящ века</td>
</tr>
<tr>
<td>toxicosis</td>
<td>toxicoses</td>
<td>токсикоз</td>
</tr>
<tr>
<td>vesicula</td>
<td>vesiculae</td>
<td>пузырек, полость</td>
</tr>
<tr>
<td>viscus</td>
<td>viscera</td>
<td>внутренние органы</td>
</tr>
<tr>
<td>zygoma</td>
<td>zygomata</td>
<td>скула, скуловая дуга</td>
</tr>
</tbody>
</table>
### SUPPLEMENT II

**WORD-BUILDING ELEMENTS**

Prefixes, Suffixes and Combining Forms

**Prefixes**

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning (English)</th>
<th>Meaning (Russian)</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>a-, an-</td>
<td>negative</td>
<td>не, нет, без</td>
<td>atypical, anaemia</td>
</tr>
<tr>
<td>ab-</td>
<td>away from</td>
<td>от, отделение</td>
<td>abduct</td>
</tr>
<tr>
<td>ana-</td>
<td>up</td>
<td>на высоте, снова</td>
<td>anabiosis</td>
</tr>
<tr>
<td>anti-, ant-</td>
<td>against</td>
<td>против, наоборот</td>
<td>antiserum</td>
</tr>
<tr>
<td>con-</td>
<td>together</td>
<td>вместе</td>
<td>confluence</td>
</tr>
<tr>
<td>contra-</td>
<td>against</td>
<td>против</td>
<td>contraindication</td>
</tr>
<tr>
<td>de-</td>
<td>from, not</td>
<td>от, не</td>
<td>depress</td>
</tr>
<tr>
<td>dia-</td>
<td>through</td>
<td>через</td>
<td>diathermy</td>
</tr>
<tr>
<td>dis-</td>
<td>negative</td>
<td>отдельно, не</td>
<td>dissection</td>
</tr>
<tr>
<td>dys-</td>
<td>difficult, bad</td>
<td>трудно, плохо</td>
<td>dyspnoea</td>
</tr>
<tr>
<td>endo-</td>
<td>within</td>
<td>внутри</td>
<td>endocardium</td>
</tr>
<tr>
<td>epi-</td>
<td>upon</td>
<td>на, над</td>
<td>epidermis</td>
</tr>
<tr>
<td>extra-</td>
<td>beyond</td>
<td>вне, свыше</td>
<td>extraabdominal</td>
</tr>
<tr>
<td>fore-</td>
<td>in front of</td>
<td>пред, перед</td>
<td>forearm</td>
</tr>
<tr>
<td>hemi-</td>
<td>half</td>
<td>половина</td>
<td>hemisphere</td>
</tr>
<tr>
<td>hyp(o)-</td>
<td>under</td>
<td>ниже, под</td>
<td>hypoglossal</td>
</tr>
<tr>
<td>hyper-</td>
<td>above</td>
<td>выше, повышенный</td>
<td>hypertension</td>
</tr>
<tr>
<td>im-, in-</td>
<td>lack of</td>
<td>недостаток</td>
<td>immature, inactive</td>
</tr>
<tr>
<td>in-</td>
<td>into, in</td>
<td>внутри, в</td>
<td>incavitary</td>
</tr>
<tr>
<td>inter-</td>
<td>between</td>
<td>между, во время</td>
<td>intercellular</td>
</tr>
<tr>
<td>intra-</td>
<td>within</td>
<td>внутри</td>
<td>intracavitary</td>
</tr>
<tr>
<td>non-, not-</td>
<td>no</td>
<td>не</td>
<td>nontender, notmanifest</td>
</tr>
<tr>
<td>ob-</td>
<td>against</td>
<td>против(о)</td>
<td>obstructive</td>
</tr>
<tr>
<td>peri-</td>
<td>around</td>
<td>вокруг, около</td>
<td>peripheral</td>
</tr>
<tr>
<td>post-</td>
<td>after</td>
<td>после</td>
<td>postmortem</td>
</tr>
<tr>
<td>pre-</td>
<td>before</td>
<td>перед</td>
<td>prepuberal</td>
</tr>
<tr>
<td>re-</td>
<td>back</td>
<td>снова, опять</td>
<td>reanimation</td>
</tr>
<tr>
<td>semi-</td>
<td>half</td>
<td>половина</td>
<td>semifluid</td>
</tr>
<tr>
<td>sub-</td>
<td>under</td>
<td>под, неполный</td>
<td>subtotal</td>
</tr>
<tr>
<td>super-</td>
<td>above</td>
<td>над, сверх</td>
<td>supersecretion</td>
</tr>
<tr>
<td>trans-</td>
<td>across</td>
<td>через, сквозь</td>
<td>transplantation</td>
</tr>
<tr>
<td>uni-</td>
<td>one</td>
<td>один, одинаковый</td>
<td>uniform</td>
</tr>
</tbody>
</table>
Suffixes of Nouns Denoting Specialists in Medicine

-ant assistant, consultant
-er researcher, sterilizer
-ian physician, pediatrician
-ist pharmacologist, ophthalmologist
-or conductor, doctor

Suffixes of Nouns Denoting Different Conditions or Phenomena

-age dosage, storage
-ance appearance, assistance
-ary dispensary
-ation respiration, transformation
-ence existence, convalescence
-asis midriasis, ascariasis
-ing grafting, staining
-ion digestion, contraction
-ism nervousism, embolism
-itis gastritis, laryngitis
-ity activity, obesity
-ness muteness, blindness
-oma blastoma, fibroma
-osis myosis, fibrosis
-sion admission, erosion
-ition friction, salivation
-ure mixture, puncture

Suffixes of Adjectives

-able palpable, movable
-al chemical, lateral
-ic colic, pelvic
-ant pregnant, constant
-ent transient, pendent
-ar ocular, muscular
-ary cavitory, coronary
-ful painful, pufful
-ife infantile, febrile
-less bloodless, painless
-ous fibrous, conscious

Suffixes of Verbs

-ate activate, saturate
-fy intensify, clarify
-ize sterilize, summarize
-en strengthen, weaken

Combining Forms (Term-elements)

(a)emia blood кровь anaemia
(a)esthesia sensation чувствительность anaesthesia
alg(o)- pain боль algoscope
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>-opla</td>
<td>sight</td>
<td>зрение</td>
<td>hemiopia</td>
</tr>
<tr>
<td>oss(i)-</td>
<td>bone</td>
<td>кость</td>
<td>ossification, osteoclasy</td>
</tr>
<tr>
<td>ot(o)-</td>
<td>ear</td>
<td>ухо</td>
<td>otoscope</td>
</tr>
<tr>
<td>path(o)-</td>
<td>disease</td>
<td>болезнь</td>
<td>pathodontia</td>
</tr>
<tr>
<td>-pathy</td>
<td>disease</td>
<td>болезнь</td>
<td>traumapathy</td>
</tr>
<tr>
<td>-penia</td>
<td>lack</td>
<td>недостаток</td>
<td>leucopenia</td>
</tr>
<tr>
<td>pharmaco(o)-</td>
<td>drug</td>
<td>лекарство</td>
<td>pharmacology</td>
</tr>
<tr>
<td>-philia, -phile</td>
<td>tendency</td>
<td>склонность</td>
<td>hemophilia</td>
</tr>
<tr>
<td>phleb(o)-</td>
<td>vein</td>
<td>вена</td>
<td>phlebogram</td>
</tr>
<tr>
<td>-phobia</td>
<td>fear</td>
<td>страх</td>
<td>hydrophobia</td>
</tr>
<tr>
<td>-plastic, -plasty</td>
<td>operation</td>
<td>пластическая операцiя</td>
<td>genioplasty</td>
</tr>
<tr>
<td>-py(o)-</td>
<td>pus</td>
<td>гной</td>
<td>pyogenic</td>
</tr>
<tr>
<td>rhin(o)-</td>
<td>nose</td>
<td>нос</td>
<td>rhinitis</td>
</tr>
<tr>
<td>rrhage, -rrhagia</td>
<td>bleeding</td>
<td>кровотечение</td>
<td>hemorrhage</td>
</tr>
<tr>
<td>-rrhea, -rrhoea</td>
<td>flowing</td>
<td>течение, истечение</td>
<td>diarrhea</td>
</tr>
<tr>
<td>-sclerosis</td>
<td>hardness</td>
<td>затвердение</td>
<td>atherosclerosis</td>
</tr>
<tr>
<td>-scopy</td>
<td>exploration</td>
<td>исследование</td>
<td>gasroscopy</td>
</tr>
<tr>
<td>stern(o)-</td>
<td>sternum</td>
<td>грудина</td>
<td>sternocostal</td>
</tr>
<tr>
<td>stomat(o)-</td>
<td>mouth</td>
<td>рот</td>
<td>stomatoplasty</td>
</tr>
<tr>
<td>tachy-</td>
<td>quick</td>
<td>быстый</td>
<td>tachycardia</td>
</tr>
<tr>
<td>-thorac(o)-</td>
<td>chest</td>
<td>грудная клетка</td>
<td>thoracopathy</td>
</tr>
<tr>
<td>thromb(o)-</td>
<td>blood clot</td>
<td>сгусток крови</td>
<td>thrombophlebitis</td>
</tr>
<tr>
<td>thyre(o)-</td>
<td>thyroid</td>
<td>шитовидная железа</td>
<td>thyrocele</td>
</tr>
<tr>
<td>-tomy</td>
<td>cutting</td>
<td>разрез, рассечение</td>
<td>gastrostomy</td>
</tr>
<tr>
<td>toxic(o)-</td>
<td>poisoning</td>
<td>отправление</td>
<td>toxicology</td>
</tr>
<tr>
<td>-trophia, -trophy</td>
<td>nourishment</td>
<td>питание</td>
<td>hypotrophy</td>
</tr>
<tr>
<td>urin(o)-</td>
<td>urine</td>
<td>моча</td>
<td>uranalysis</td>
</tr>
<tr>
<td>-uria</td>
<td>urine</td>
<td>моча</td>
<td>blennuria</td>
</tr>
<tr>
<td>vas(o)-</td>
<td>vessel</td>
<td>сосуд</td>
<td>vasoconstriction</td>
</tr>
<tr>
<td>zym(o)-</td>
<td>ferment</td>
<td>фермент</td>
<td>zymogenic</td>
</tr>
</tbody>
</table>
### SUPPLEMENT III

#### ABBREVIATIONS

IN ENGLISH MEDICAL SCIENTIFIC LITERATURE

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAMC</td>
<td>Association of American Medical Colleges</td>
</tr>
<tr>
<td>abdom.</td>
<td>abdomen, abdominal</td>
</tr>
<tr>
<td>abnorm.</td>
<td>abnormal, abnormalities</td>
</tr>
<tr>
<td>acad.</td>
<td>academy</td>
</tr>
<tr>
<td>ADA</td>
<td>American Dental Association</td>
</tr>
<tr>
<td>admin.</td>
<td>administration</td>
</tr>
<tr>
<td>advert.</td>
<td>advertisement, advertising</td>
</tr>
<tr>
<td>AMA</td>
<td>American Medical Association</td>
</tr>
<tr>
<td>AMA</td>
<td>AMA Education and Research Foundation</td>
</tr>
<tr>
<td>Amer.</td>
<td>American</td>
</tr>
<tr>
<td>ANA</td>
<td>American Nurses Association</td>
</tr>
<tr>
<td>anesth.</td>
<td>anesthesia, anesthetic(s)</td>
</tr>
<tr>
<td>APHA</td>
<td>American Public Health Association</td>
</tr>
<tr>
<td>appoint.</td>
<td>appointment</td>
</tr>
<tr>
<td>artif.</td>
<td>artificial</td>
</tr>
<tr>
<td>assoc.</td>
<td>associate (d), association</td>
</tr>
<tr>
<td>a. t. s.</td>
<td>antitetanic serum</td>
</tr>
<tr>
<td>BMA</td>
<td>British Medical Association</td>
</tr>
<tr>
<td>Brit.</td>
<td>British, Britain</td>
</tr>
<tr>
<td>BMS</td>
<td>Bachelor of Medical Science</td>
</tr>
<tr>
<td>chem.</td>
<td>chemical, chemistry</td>
</tr>
<tr>
<td>clin.</td>
<td>clinic, clinical</td>
</tr>
<tr>
<td>CNS</td>
<td>central nervous system</td>
</tr>
<tr>
<td>coll.</td>
<td>college</td>
</tr>
<tr>
<td>comm.</td>
<td>committee</td>
</tr>
<tr>
<td>comm.</td>
<td>commission, commissioner</td>
</tr>
<tr>
<td>complic.</td>
<td>complicating, complication</td>
</tr>
<tr>
<td>conf.</td>
<td>conference</td>
</tr>
<tr>
<td>cong.</td>
<td>congress</td>
</tr>
<tr>
<td>congen.</td>
<td>congenital</td>
</tr>
<tr>
<td>CRs</td>
<td>conditioned reflexes</td>
</tr>
<tr>
<td>CSF</td>
<td>cerebrospinal fluid</td>
</tr>
<tr>
<td>diag.</td>
<td>diagnosis, diagnostic</td>
</tr>
<tr>
<td>div.</td>
<td>division</td>
</tr>
<tr>
<td>DM</td>
<td>Doctor of Medicine</td>
</tr>
<tr>
<td>DP</td>
<td>Doctor of Pharmacology</td>
</tr>
<tr>
<td>DSc</td>
<td>Doctor of Science</td>
</tr>
<tr>
<td>ECG</td>
<td>electrocardiogram, electrocardiography (ic)</td>
</tr>
<tr>
<td>econ.</td>
<td>economic(s)</td>
</tr>
<tr>
<td>educ.</td>
<td>education</td>
</tr>
<tr>
<td>EEG</td>
<td>electroencephalogram, electroencephalography (ic)</td>
</tr>
<tr>
<td>environ.</td>
<td>environment (al)</td>
</tr>
<tr>
<td>eval.</td>
<td>evaluate, evaluation</td>
</tr>
<tr>
<td>exam.</td>
<td>examination, examiner(s)</td>
</tr>
<tr>
<td>exec.</td>
<td>executive</td>
</tr>
<tr>
<td>exper.</td>
<td>experimental</td>
</tr>
<tr>
<td>FL</td>
<td>fluid</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
</tr>
<tr>
<td>FMG</td>
<td>foreign medical graduate</td>
</tr>
<tr>
<td>found.</td>
<td>foundation</td>
</tr>
<tr>
<td>gov't.</td>
<td>government</td>
</tr>
<tr>
<td>grad.</td>
<td>graduate</td>
</tr>
<tr>
<td>gyn.</td>
<td>gynecologic, gynecology</td>
</tr>
<tr>
<td>HEW</td>
<td>Health, Education and Welfare Dept</td>
</tr>
<tr>
<td>hosp.</td>
<td>hospital, hospitalization</td>
</tr>
<tr>
<td>indust.</td>
<td>industrial, industry</td>
</tr>
<tr>
<td>info.</td>
<td>information</td>
</tr>
<tr>
<td>inst.</td>
<td>institute</td>
</tr>
<tr>
<td>insuff.</td>
<td>insufficiency</td>
</tr>
<tr>
<td>intest.</td>
<td>intestinal, intestine(s)</td>
</tr>
<tr>
<td>intox.</td>
<td>intoxication</td>
</tr>
<tr>
<td>l. r.</td>
<td>internal resistance</td>
</tr>
<tr>
<td>IU</td>
<td>Immunizing Unit</td>
</tr>
<tr>
<td>IUD</td>
<td>intrauterine devices</td>
</tr>
<tr>
<td>JCAH</td>
<td>Joint Commission on Accreditation of Hospitals</td>
</tr>
<tr>
<td>lab.</td>
<td>laboratory</td>
</tr>
<tr>
<td>LDH</td>
<td>lactic dehydrogenase</td>
</tr>
<tr>
<td>manifest.</td>
<td>manifestation</td>
</tr>
<tr>
<td>mD</td>
<td>Doctor of Medicine</td>
</tr>
<tr>
<td>Med.</td>
<td>medical, medicine</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>DAH</td>
<td>disordered action of the heart</td>
</tr>
<tr>
<td>deg.</td>
<td>degeneration</td>
</tr>
<tr>
<td>defic.</td>
<td>deficiency</td>
</tr>
<tr>
<td>nat.</td>
<td>national</td>
</tr>
<tr>
<td>NDA</td>
<td>National Dental Association</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service</td>
</tr>
<tr>
<td>NIH</td>
<td>National Institutes of Health</td>
</tr>
<tr>
<td>NLM</td>
<td>National Library of Medicine</td>
</tr>
<tr>
<td>NTR</td>
<td>normal temperature and pressure</td>
</tr>
<tr>
<td>obst.</td>
<td>obstetric, obstetricians</td>
</tr>
<tr>
<td>occup.</td>
<td>occupation, occupational</td>
</tr>
<tr>
<td>op.</td>
<td>operation, operative</td>
</tr>
<tr>
<td>ophth.</td>
<td>ophthalmology</td>
</tr>
<tr>
<td>P.</td>
<td>position</td>
</tr>
<tr>
<td>p.</td>
<td>pulse</td>
</tr>
<tr>
<td>PA</td>
<td>physician's assistant</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan American Health Organization</td>
</tr>
<tr>
<td>PHS</td>
<td>Public Health Service</td>
</tr>
<tr>
<td>PhD</td>
<td>British Pharmacopeia</td>
</tr>
<tr>
<td>Pil.</td>
<td>pilula</td>
</tr>
<tr>
<td>p. m.</td>
<td>post mortem</td>
</tr>
<tr>
<td>pregn.</td>
<td>pregnancy, pregnant</td>
</tr>
<tr>
<td>pres.</td>
<td>president</td>
</tr>
<tr>
<td>prof.</td>
<td>professor</td>
</tr>
<tr>
<td>progn.</td>
<td>prognosis</td>
</tr>
<tr>
<td>metabol.</td>
<td>metabolism, metabolites</td>
</tr>
<tr>
<td>MOH</td>
<td>Medical Officer of Health</td>
</tr>
<tr>
<td>MS</td>
<td>Master of Surgery</td>
</tr>
<tr>
<td>musc.</td>
<td>muscles, muscular</td>
</tr>
<tr>
<td>PSRO</td>
<td>Professional Standards Review Organization</td>
</tr>
<tr>
<td>pulm.</td>
<td>pulmonary</td>
</tr>
<tr>
<td>recip.</td>
<td>recipient</td>
</tr>
<tr>
<td>res.</td>
<td>research</td>
</tr>
<tr>
<td>resp.</td>
<td>respiration, respiratory</td>
</tr>
<tr>
<td>rheum.</td>
<td>rheumatic, rheumatism</td>
</tr>
<tr>
<td>RS</td>
<td>Royal Society</td>
</tr>
<tr>
<td>ScD</td>
<td>Doctor of Science</td>
</tr>
<tr>
<td>sci.</td>
<td>science, scientific</td>
</tr>
<tr>
<td>soc.</td>
<td>society</td>
</tr>
<tr>
<td>surg.</td>
<td>surgery, surgical</td>
</tr>
<tr>
<td>tox.</td>
<td>toxicity, toxicology</td>
</tr>
<tr>
<td>T.</td>
<td>temperature</td>
</tr>
<tr>
<td>Tb.</td>
<td>tubercle bacillus</td>
</tr>
<tr>
<td>tuberc.</td>
<td>tuberculosis, tuberculous</td>
</tr>
<tr>
<td>U.</td>
<td>unit</td>
</tr>
<tr>
<td>Univ.</td>
<td>university</td>
</tr>
<tr>
<td>USP</td>
<td>United States Pharmacopeia</td>
</tr>
<tr>
<td>USPHS</td>
<td>United States Public Health Service</td>
</tr>
<tr>
<td>VA</td>
<td>Veterans Administration</td>
</tr>
<tr>
<td>vasc.</td>
<td>vascular</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WMA</td>
<td>World Medical Association</td>
</tr>
</tbody>
</table>
### CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Unit 1</th>
<th>Unit 2</th>
<th>Unit 3</th>
<th>Unit 4</th>
<th>Unit 5</th>
<th>Unit 6</th>
<th>Unit 7</th>
<th>Unit 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Health Service</td>
<td>Prospects of the Development of Public Health in the USSR</td>
<td>Diseases Must be Defeated</td>
<td>Medical Care of Mother and Child</td>
<td>Medical Care at Home</td>
<td>WHO (World Health Organization)</td>
<td>Higher Medical Education in the USSR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiology</td>
<td>The Mysteries of the Brain</td>
<td>Physiology of the Skin</td>
<td>The Blood</td>
<td>Gastro-Intestinal Tract and Its Disorders</td>
<td>The Kidneys</td>
<td>Innervation of the Eye</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therapy</td>
<td>The Syndrome of Heart Failure</td>
<td>Atherosclerosis</td>
<td>Angina Pectoris</td>
<td>Hypertension</td>
<td>Diabetes Mellitus</td>
<td>Tuberculosis of the Lungs</td>
<td>Acute Leukemia</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>Soviet Surgery</td>
<td>Surgical Diagnosis</td>
<td>Types of Wounds</td>
<td>Shock</td>
<td>Back to Work After Infarction</td>
<td>Sources of Contamination in Open Heart Surgery</td>
<td>Antiseptics and Asepsis</td>
<td>The General Anesthetics</td>
</tr>
<tr>
<td>Section V</td>
<td>Oncology</td>
<td>Page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------------------------</td>
<td>------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 1</td>
<td>Types of Tumours</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 2</td>
<td>Cancer</td>
<td>116</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 3</td>
<td>Strontium Diagnostics of Malignant Tumours of Bones</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 4</td>
<td>Treatment of Thyroid Malignancies</td>
<td>124</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 5</td>
<td>X-Ray Diagnostics of Mammary Tumours</td>
<td>129</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section VI</th>
<th>Pharmacology</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>The Scope of Pharmacology</td>
<td>132</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Penicillin</td>
<td>137</td>
</tr>
<tr>
<td>Unit 3</td>
<td>The Sulfonamides</td>
<td>140</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Drugs Used in the Treatment of Tuberculosis</td>
<td>144</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section VII</th>
<th>Toxicology</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>The Subject of Toxicology</td>
<td>147</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Acute Poisoning and Chronic Alcoholism</td>
<td>151</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section VIII</th>
<th>Stomatology</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Pooling the Efforts of Stomatologists</td>
<td>156</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Dental Caries</td>
<td>159</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section IX</th>
<th>Infectious Diseases</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Influenza</td>
<td>162</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Haemophilus Influenza Pericarditis and Empyema with Thyroiditis in an Adult</td>
<td>167</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Cholera Outbreak and Its Control</td>
<td>171</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Smallpox Control in Great Britain</td>
<td>175</td>
</tr>
<tr>
<td>Unit 5</td>
<td>Measles</td>
<td>179</td>
</tr>
<tr>
<td>Unit 6</td>
<td>Types of Immunity</td>
<td>182</td>
</tr>
</tbody>
</table>

Supplement I 187
Supplement II 189
Supplement III 192
Пособие по английскому языку для студентов-медиков

Редактор Л. А. Назорная
Переплет художника Н. Н. Голокозаковой
Художественный редактор Е. В. Чурин
Технический редактор А. И. Омоховская
Корректор С. Г. Чиркина

Информ. бланк № 4839
Сдано в набор 31.07.79. Подп. в печать 15.02.80. Формат 60×90/16. Бумага типогр. № 3. Лит. гарн. Вис. печать. 12,5 печ., л. 14,18. уче.-изд. л. Тираж 1200 экз. Изд. № 4084. Зак. № 0-106. Цена 05 к.
Головное издательство издательского объединения «Вища школа», 252054, Киев-54, Гоголевская, 7
Книжная фабрика «Коммунист» РПО «Полиграфкинг» Госкомиздата УССР, 310012, Харьков-12, Энгельса, 11.
В Головном издательстве
издательского объединения «Вища школа»
v 1979 г. вышла из печати новая книга:

Петров Б. Р., Овденько А. В., Петрова Н. П. Практический русско-английский медицинский разговорник. Для студентов медицинских институтов. 13 л 75 к. 30 000 экз.

Практический русско-английский медицинский разговорник является учебным пособием по английскому языку и содержит материал, необходимый для того, чтобы научить студентов профессиональному общению на английском языке: собрать анамнез, обследовать больного, поставить диагноз, назначить лечение, а также вести беседы на специальные и общемедицинские темы.

Методическая организация материала разговорника базируется на эффективных приемах обучения разговорной речи. Большое внимание уделяется обучению речевым образцам в связи с определенными ситуациями: обход больных в отделении, прием больных в поликлинике, подготовка к операции и т. д.

Рассчитан на студентов медицинских институтов. Может быть также использован клиническими специрдинаторами, аспирантами, врачами, работающими за рубежом, специалистами-медиками, совершенствующими знания английского языка.