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Unit 1. From the History of Railways
Слова для запоминания:
1) rail – рельс; railway – железная дорога;
2) means – средство, способ; by means of – посредством, с помощью;
3) travel – п поездка, движение; v двигаться, ехать, путешествовать;
   traveler – п пассажир;
4) freight – груз(ы);
5) important – важный, значительный;
6) play a part – играть роль;
7) develop – развивать(ся); разрабатывать, создавать; development – развитие, достижение, разработка;
8) depend (on, upon) – зависеть;
9) fast – скорый, быстрый; fast train – скорый поезд;
10) safe – безопасный, надежный;
11) (the) very – самый;
12) operate – управлять, проводить в действие; работать; put into operation – ввести в действие (в эксплуатацию);
13) call – звать, называть;
14) success – успех, удача; be a success – иметь успех, удаваться;
   successful – успешный, удачный;
15) light – легкий;
16) construct – строить, конструировать;
17) power – сила, мощность, энергия, снабжать энергией; powerful – мощный;
18) tractive power – тяговая сила; traction – тяга;
19) difficult – трудный;
20) possible – возможный;
21) suitable – подходящий, годный; suit – подходить, соответствовать;
22) service – эксплуатация; перевозки; обслуживание; put into service – ввести в действие (в эксплуатацию); serve – служить, обслуживать;
23) appear – появляться;
24) wide – широкий;
25) works – завод(ы);
26) follow – следовать;
27) thanks to – благодаря;
28) place – место, местоположение; помещать, размещать; take place – происходить, иметь место;
29) change – изменение, перемена; изменять(ся);
30) introduce – внедрять, вводить; introduction – внедрение, введение.
TEXT A. FROM THE HISTORY OF RAILWAYS

I

(1) We usually think of railways as a means of travel. It is true that railways are often used for travel, but their most important function is to carry freight.

(2) Railways play a very important part in the national economy of a country because the economic and political development of a country depends on a wide network of transportation systems. Although we have now faster and more modern means of communication and transport, railways are still the safest and the most popular means of transportation.

(3) The early railways were not like the railways we have today. The very first railways used horses for drawing trains and were put into operation for transporting such products as coal, ore and timber. Later on, the horse railways were used as passenger transport in large cities. But these railways did not last long.

(4) One of the first attempts to use the steam engine to draw passenger and freight trains was made in 1808 by Richard Trevithick, an Englishman, who demonstrated his working model in London. This locomotive was looked at with great interest when it ran on a circular track of iron rails. For a shilling the public could travel in a carriage drawn by the steam engine. The locomotive 'was called "Catch-me-who-can", and people could really catch it because it developed only 12mph. But one day a rail broke and the locomotive overturned, ending Trevithick's career as an inventor.

(5) In 1829, George Stephenson, an English inventor and engineer, built a successful steam locomotive which he called the "Rocket". This locomotive was much smaller and lighter than the steam locos developed later on, and it was much slower. However, it could draw a small train of loaded cars on the railway and developed an unheard-of speed of 13 mph (21 kph). The invention of the steam locomotives made the railway the most important of all means of transportation.

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(6) Stephenson not only constructed the world's first steam locomotive but he was also the builder of the first public railway in England – the Stockton and Darlington railway using both steam and horses as tractive power. This rail way was a success and Stephenson was asked to build another railway, now steam-powered, between Liverpool and Manchester.
(7) It is difficult for the people living in the second half of the 20th century to imagine the opposition to the building of the early railroads. Most people did not believe that it was possible to make locomotives suitable for service. Many of them were afraid of the railways when they first appeared and did all in their power to stop railway construction. However, in 1824 the steam-powered railways were already in wide use in England.

(8) In Russia, many people also had doubts about the possibility of using steam engines in the Russian winter. Nevertheless, the first railway using steam traction was put into service at the Nizhni Tagil metallurgical works. It was a short distance line covering only 854 metres. This railway was soon followed by another one constructed in 1837. It was a 15-mile public railway between St. Petersburg and Tsarskoye Selo.

(9) The first steam locomotive in Russia was built by the Cherepanovs, father and son, who were talented and skilled workmen of their time. Thanks to the Cherepanovs our country may be placed among the countries which were the first to use steam as tractive power.

(10) Since that time many changes have taken place on railways. Still greater changes will take place in the future. We shall run more powerful locomotives and have more comfortable cars. Greater speeds will be developed by diesel and electric locomotives. Railways will soon be operated by means of electronic computers. A great number of other developments which were not heard and thought of before will be introduced.

2. Подготовьте сообщения на следующие темы, используя сочетания слов, данные в скобках (каждое предложение начинайте с подлежащего).

1. The importance of railways.
   (to have functions, to carry people, to transport freight, to play a part, economic and political development, popular means of transport, safe means of transportation).

2. The first steam locomotive.
   (to invent a successful steam locomotive, to be small and light, not so fast as, to draw trains, to develop a speed).

3. The future of railways.
   (great changes, to take place, to run powerful locomotives, comfortable cars, to develop speeds, to be operated by electronic computers, to introduce developments).
TEXT B. RAILROADING BEGINS

(1) In the early years of the 19th century the idea of using steam engines to draw freight and passenger trains interested many inventors. But the history of steam traction began much earlier when an English engineer, William Murdock, built a working model of a steam locomotive in 1784. It was a baby locomotive about a foot (30.5 cm) high. It had three wheels (колесо) and its boiler (котёл) was heated by a spirit lamp.

(2) One day Murdock wanted to test (испытать) his engine. He lighted the spirit lamp and soon the water began boiling. The engine ran fast along the street with loud roaring (рёв).

(3) Unfortunately, nothing came of Murdock's invention because his little locomotive was thought of as the creation (творение) of the Devil.

(4) And this is how the first steam locomotive appeared in the USA. One day in 1804 the people of Philadelphia saw a roaring and fire-breathing monster running along the street, followed by shouting boys. It was really the first steam locomotive in America, although it did not run on rails. After its short journey on land the locomotive fell down into the river and disappeared in the water.

3. Прочитайте текст (с) без словаря (3 мин) и ответьте по-русски на вопрос, почему конец поездки локомотива Купера был не такой удачный, как ее начало?

TEXT C. THE TOM THUMB

(1) The early locomotives were small and slow and they were not powerful. Besides, the rails on which they ran broke very often. So many people did not take them seriously.

(2) But in 1830, Peter Cooper, an American, constructed a steam loco which could develop a higher speed than the other engines. The locomotive was so small and light that his inventor called it the Tom Thumb.

(3) The first run of the Tom Thumb was quite successful. The locomotive travelled a 15-mile distance in one hour and 12 minutes to the delight of its inventor and 36 passengers. But the end of the travel was not so happy as the beginning.

(4) On the way back the inventor wanted to show that his loco could run much quicker than a carriage drawn by a horse. The Tom Thumb ran so fast that soon it was really ahead (впереди) of the carriage. Suddenly, something broke in the engine and the locomotive slowed down. The horse ran fast with the passengers looking triumphant and happy.

Unit 2. The History of Russian Railways

Слова для запоминания:
1) total – весь, полный, общий;
2) length – длина, протяженность; long – длинный;
I

The Russia is often spoken of as a great rail power because it has the largest railway system in the world. The total length of Russian railways is over 143,000 km. Russian Railways (SZD) carries an enormous volume of home traffic – nearly 66 per cent of freight and 37 per cent of passengers.

The Russian state got from the tsarist regime a poorly-organized and poorly-developed railway network greatly damaged in the First World War. By 1917 the railway network was 70,000 km long and most of it (85 per cent), was in the European part of the country. The freight trains ran at a speed of 30 kph.
and the passenger trains reached 45–50 kph.

(3) However, old Russia could be proud of its railway scientists and engineers who constructed good steam locomotives and the passenger cars produced in Russia were the best in Europe. The Trans-Siberian Railway was thought of as a very important means of communication between Europe and Asia. The trains built for regular service on that line were made up of richly-decorated sleeping cars which provided many comforts for passengers.

(4) After the Great October Socialist Revolution the Communist Party and the Russian Government took steps to reconstruct the railways of the country. The development of railway transport was closely connected with the GOELRO Plan. Initiated by V.I. Lenin, the GOELRO Plan was worked out in 1920. It provided for the construction of numerous power plants and a whole network of electrified railways. In 1926, an electric train started its first run on the suburban line between Baku and Sabunchi.

(5) Another very important step was the development of the diesel locomotive. It was in the Russia that the world's first main-line diesel locomotive was built and put into service on November 6, 1924. When reconstructed, SZD became a highly-developed and a safe" means of transport in the country.

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(6) Nowadays, Russian Railways carries about 50 per cent of the world's rail traffic. Most traffic is carried by powerful diesel and electric locomotives. Automation and computers are introduced into many branches of railway engineering. Particular attention is paid to high-speed running. Speeds of 120–150 kph are practical for the express trains. In the near future Russian trains will run at 200 kph. The first high-speed train in the USSR has been developed in Riga. It is this train that is designed to run the high-speed service between Moscow and Leningrad.

(7) The international railway exhibitions held in the Russia usually attract the attention of railway specialists and businessmen from abroad. The Russian equipment exhibited includes modern locomotives and cars, efficient track-laying machines, automatic telecommunication systems, powerful cranes and other railway equipment.

(8) The construction of the Baikal-Amur Railway (BAM) is of great importance for the economic development of the USSR. The building of this line was necessary to open up new areas in Siberia for the exploitation of coal, ore, oil and other mineral resources and shorten the way to the Pacific Ocean by hundreds of kilometers.

(9) The building of the BAM Railway was carried out in very hard topographical and geological conditions. Permafrost and severe climate made
the work of the railwaymen extremely difficult. Besides, the line was laid through a totally impassable taiga and crossed a great number of large and small rivers. It was written about as "the project of the century". Thousands of young people eagerly responded to the Communist Party's call and took an active part in the gigantic project of the country. It is thanks to the joint efforts made by all Russian people that the realization of the project has become possible.

1. Why is Russia often called a great rail power? 2. Could railways in the early years of the young Russian Republic carry heavy traffic? Why couldn't they? 3. Why could old Russia be proud of its railway engineers? 4. What was provided for in the GOELRO Plan for the further development of rail transport? 5. Was a main or a suburban line first electrified? 6. Where and when was the first main-line diesel locomotive constructed? 7. What makes Russian railways the most efficient means of transport in our country? 8. What problem does Russian railways pay special attention to nowadays? 9. What speeds are now practical for the express trains? 10. Why do the international railway exhibitions held in the USSR attract the attention of specialists from abroad? 11. Why was the construction of the BAM Railway of great importance to our country? 12. What factors made the construction of the BAM Railway extremely difficult?

2. Подготовьте сообщения на следующие темы, используя сочетания слов, данные в скобках (каждое предложение начинайте с подлежащего).

1. Russian Railways.
   (railway, network, total length, volume of traffic, powerful locomotives, automation and computing machines, run the high-speed service).

2. The BAM Railway.
   (to open up new areas, to shorten the way, hard conditions, to make great efforts, to take an active part).

3. Найдите в тексте подтверждение данных высказываний.
   1. At the beginning of the 20th century travelling by the Trans-Siberian Railway was not safe. 2. Now the Trans-Siberian Railway can carry a large volume of traffic. 3. In the future the Trans-Siberian Railway will become a more efficient means of communication.

TEXT B. THE TRANS-SIBERIAN RAILWAY

(1) Russia occupies a vast territory in two continents, Europe and Asia. It has a dense railway network connecting its industrial centres in Europe with the Urals. But one of the most interesting railways – the Trans-Siberian main line – connects Moscow with Vladivostok, a large port on the Pacific Ocean. The total length of the line is nearly 9,600 km. That is the world's longest railway.
(2) The construction of the Trans-Siberian line began in 1891 and it was put into operation in 1905. However, the railway was poorly built and accidents (крушения) often took place.

(3) The reconstruction of the Trans-Siberian Railway began after the Great October Socialist Revolution. Now most of the line is electrified. All freight and passenger trains are operated by powerful diesel and electric locomotives. The trains develop 140 kph on some sections and the journey from Moscow to Vladivostok in the "Rossiya" express takes you only 7 days.

(4) The Trans-Siberian Railway plays a very important part in the economic development of our country because it carries a large volume of traffic. Besides, it runs inter national container service between Europe and Japan. Greater changes will take place on the Trans-Siberian Railway in the future. Faster locomotives will be put into service. Automation and efficient electronic computers will provide a safer transportation of freight and passengers.

Unit 3. The Railroad Track

Слова для запоминания:
1) track – железнодорожный путь; lay down a track – укладывать путь;
2) feature – особенность, черта;
3) permanent way – верхние строения пути, железнодорожное полотно;
4) consist (of) – состоять (из);
5) tie – шпала;
6) different – различный, несходный; differ – различаться, отличаться;
7) rest – покой;  
8) heavy – тяжелый, напряженный;
9) replace – заменять;
10) strength – прочность, сила; strong – прочный, сильный;
11) (the) same – тот же самый;
12) gauge – ширина колеи;
13) for – так как; для, за, в течение;
14) joint – стык, место соединения;
15) switch – стрелка, переключатель;
16) weight – вес; weigh – весить, взвешивать;
17) according to – согласно;
18) almost – почти;
19) in order to – для того чтобы;
20) last – служить;
21) support – поддерживать, подпирать, опора;
22) during – в течение;
23) improve – улучшать, усовершенствовать;
24) eliminate – устранять, уничтожать;
TEXT A. THE RAILROAD TRACK

I

(1) The track is one of the basic features of a railway. It is also called the permanent way. The fact is that in the early days of railroad building the workers first had to lay temporary tracks to transport the materials to the construction site. And only after that they laid down the permanent tracks or the permanent way, as it was called. The permanent way consists of rails, ties, and ballast.

(2) The railroad track of today is quite different from that used in the early days of railways. The first tracks had no ballast, the rails were made of wood and rested on heavy blocks of granite. Then the wooden rails were replaced by iron ones, and the granite blocks were replaced by wooden ties or sleepers. This kind of track, however, was not strong enough for heavy steam trains. The discovery how to make cheap steel was of great importance to the railways for, when placed in the same track, steel rails had a life 15 times as long as iron rails.

(3) The distance between the rails is called the gauge. The standard gauge in most countries is 1,435 mm while in the Russia the railroads have a gauge of 1,524 mm. That gauge was finally adopted when the first main-line Moscow – St. Petersburg railway was under construction (1842–1851). Thus Russia was the world's first country where the uniform gauge was adopted for all railways. In America, the gauge was unified only in 1886.

(4) The place where the ends of the rails meet in the track is known as the rail joint. The rail joint has always been the weakest part of the track for nearly all the rails wear out first at the ends.

(5) Some railroads have two or more tracks. In order to make the trains pass from one track to another the railroads have a switch which is a very important element of the track.

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(6) The rails differ greatly in weight according to the kind of traffic
which they have to carry when placed in the track. The largest and heaviest rails are laid in the main-line tracks for it is these tracks which carry the largest volume of traffic.

(7) The ties on most tracks were almost all of wood and in order to make them last longer they were treated with creosote.

(8) The ties are not laid upon the earth for the earth cannot support the track structure. They rest upon a bed of crushed rock or gravel, which is called ballast. Ballast is a very important element of the track for it is the ballast which supports the track structure, holds the track in position and provides needed drainage.

(9) The history of railways is more than one century and a half. During this period the track structure has been substantially improved. One of the greatest improvements was the elimination of rail joints. In order to reduce the number of joints the rails are welded into continuous lengths. These continuous or long-welded rails have greater strength and provide a smoother running of trains at far greater speeds.

(10) Another improvement which has made it possible to increase speeds on railways is the use of concrete sleepers. Thus in some countries, concrete sleepers have replaced wooden ones on heavily used main lines because of their advantages. Concrete sleepers have a longer life and a far greater weight than those made of wood. The greater weight of concrete sleepers provides the greater stability of track. It is this factor which has greatly contributed to increased speeds.

1. Прослушайте вопросы и ответьте на них, согласно тексту.

2. Подготовьте сообщения на следующие темы, используя сочетания слов, данные в скобках (каждое предложение начинайте с подлежащего).
1. The Railroad Track.
(permanent way, important feature, to consist of, gauge, joint, to wear
out, switch, to make the trains pass).

2. The Ties.
   (wooden ties, to replace, concrete sleepers, to lay in the main-line track, to last long, heavy weight, to increase stability).

3. The Ballast.
   (to rest, three functions, to support, to hold in position, to provide drainage).

TEXT B. THE CONSTRUCTION OF THE TRANS-CASPIAN RAILWAY

(1) There is a great difference between the conditions in which the railway builders had to work in the past and those provided today. The construction of the Trans-Caspian railway may be a good illustration. In the eighties of the last century a project was worked out to build with the greatest possible speed a railway near the Caspian Sea. The job was especially difficult because of lack (недостаток) of drinking water. For the first 177 km the Caspian water had to be distilled and taken to the builders in large tanks.

(2) Other difficulties with which the workers had to meet were diseases (болезнь) and sandstorms. The sand in mobile dunes was carried from place to place by strong winds. Great efforts were made to overcome those difficulties. In order to make the sand near the Caspian Sea as hard as possible the workers poured sea water on the sand or built fences (заграждение) of wood to arrest the dunes. It was a hard and a time-consuming job.

(3) The railway was planned as a standard gauge line. The rails and sleepers were all of home production. Over 22,000 people took part in the construction work.

(4) The men worked in six-hour shifts. The building materials and all the needed equipment were carried by trains that ran twice daily from the base. Every day four miles of track were laid down. It was an unheard-of speed for those days.

1. Прочитайте текст (с) без словаря (3 мин), назовите по-русски основные этапы строительства железнодорожного пути и наиболее важные строительно-дорожные машины. Определите значения выделенных слов по контексту.

TEXT C. TRACK CONSTRUCTION

(1) It is not an easy job to build a railway. The railway is built on a strip of land which is called the right-of-way (полоса отвода).

(2) The right-of-way must be carefully prepared for laying down the tracks. At first, it must be cleared from trees, bushes and then graded (выравнивать) by special machines known as graders.
After the right-of-way is cleared and graded the permanent way is constructed. Ties and rails are laid upon the ballast foundation and the ballast is packed between the ties and on each side of the track to hold the ties in place.

The methods of railroad building have changed greatly in recent years. The greatest change has been the replacement of hand labour by machines, such as powerful bulldozers, huge excavators, scrapers, graders, etc.

The most modern method of railway construction is laying the track in pre-assembled (сборный) lengths, that is, the lengths of rails to which the sleepers are already attached. This work is carried out by a high-speed track-laying crane, a wonderful machine which lays pre-assembled lengths of track in a few minutes. One of the most efficient machines of this kind is the Platov track-laying crane having an output of 900–1 000 meters of track per hour.

Unit 4. Railway Civil Engineering

Слова для запоминания:
1) as well as – так же как, а также;
2) enable – давать возможность;
3) need – нуждаться, необходимость; meet the needs – удовлетворять потребности;
4) subject – продвигать (что-либо);
5) stage – этап, стадия;
6) obvious – очевидный, явный;
7) appearance – (внешний) вид;
8) maintain – поддерживать, содержать (в исправности); maintenance – содержание, уход; maintenance cost – расходы по содержанию;
9) extensively – широко;
10) finish(es) – отделка;
11) on the one hand – с одной стороны; on the other hand – с другой стороны;
12) particular – особый, особенный; particularly – особенности, очень;
13) regard – считать, рассматривать;
14) layout – расположение, планировка;
15) face – сталкиваться (с), стоять перед лицом;
16) manual – ручной; manual labour – ручной труд;
17) level – уровень;
18) call for – требовать;
19) prefabricated parts (units) – собранный части (зданий и т.д.);
20) erect – сооружать, возводить;
21) considerable – значительный;
22) too (+ прил. нареч.) – слишком;
23) cope (with) – справиться (с);
24) flow – течь, литься;
25) terminal – конечный, конечная станция, вокзал;
1. Прочитайте текст (5 мин на каждую часть) и в каждом абзаце найдите наиболее важное по смыслу предложение (или предложения) и передайте их содержание по-русски (часть I); скажите, какие из московских вокзалов наиболее примечательны (часть II).

TEXT A. RAILWAY CIVIL ENGINEERING

I

(1) The track is the basic feature of a railway. But there must be also various kinds of buildings as well as tunnels, bridges, viaducts and other engineering structures which enable the railways to perform their job successfully. The railway buildings we are familiar with include station buildings, goods yards and depots. There is no need to say that all of them must be sufficiently strong and outwardly attractive.

(2) Railway buildings being subjected to intensive vibration and noise, these factors should be taken into account at the initial stage of construction. So nowadays collaboration must exist between engineers and architects in the designing and construction of different types of buildings in order to meet various needs of railway service and to make the buildings aesthetically satisfying.

(3) It is quite obvious that the outward appearance of railway stations is not of minor importance. Steam traction with its attendant smoke and dirt having been replaced by diesel and electric traction, the problem of maintaining railway buildings was greatly facilitated. The new materials we extensively use today for finishes also contribute to the attractiveness of railway stations. On the other hand, a wide use of such materials as plastics and particularly glass some times increases substantially the maintenance cost of buildings. So particular attention should be given to the selection of proper materials for finishes.

(4) The designing of a station building for a large city is a very complicated job for civil engineers and architects since this building should be regarded, above all, as part of the city's public centre. So, on the one hand, its architectural design must be in line with the style of the surrounding buildings. On the other hand, however, strict limitations are imposed on any project of this kind by track layout and other needs of railway service. Other problems the architects and the builders face have much in common with the problems encountered by all civil engineers. Nowadays, the process of construction is being increasingly mechanized. The replacement of hard manual labour by machines enables the builders...
to carry out the work speedily and makes their work much easier. Besides, a high level of mechanization makes it possible to perform the work with less manpower.

(5) The need to speed up the work of construction often calls for the application of prefabricated parts of buildings. Wide use of prefabricated units is also made of in the erection of railway substations as well as structures to carry contact wires for electric railways. It is the application of prefabricated parts that enables the civil engineers considerably reduce the initial cost of railway electrification.

(6) As the result of considerable improvements on railways, a large volume of reconstruction work has to be carried out with station buildings. The matter is that too many of them were built long ago. Having decorated the stations in rich Gothic or classical style the architects did not make them convenient for passengers. So now some of them cannot cope with the increased flow of passengers. Thus, some railway stations in Britain, a pioneer in railway construction, are an object of severe criticism from the public.

(7) Railway terminals in Moscow are a notable exception in this respect. All nine stations are worth looking at, several of them being architecturally remarkable.

(8) This refers, first of all, to the Yaroslavsky and Kazansky stations. They both are remarkable architectural curiosities. Thus, the design of the present Yaroslavsky station, built in 1906–1907 by architect P.O. Shekhtel, is based on the motifs of northern Russia folklore.

(9) The Kazansky terminal, across Komsomolskaya Square, can rival the station just described. Its architect, Academician A.V. Schusev, based his design on the 17th century themes. The big clock with the signs of the zodiak is also of interest.

(10) The Kursky terminal, as we see it now, has replaced a massive and rather ugly nineteenth century building. The new large and spacious station is regarded one of the largest and the most comfortable railway stations in Europe.

2. Прослушайте вопросы и ответьте на них, согласно тексту а.
1. What factors must be taken into account at the initial stage of constructing a railway building? 2. Why must engineers and architects work together designing a railway building? 3. Why has the outward appearance of station buildings become more attractive? 4. What problem is involved in choosing the materials for finishes? 5. What factors determine the design of a station building? 6. Are prefabricated units used only in the construction of railway buildings? 7. What advantages does the application of prefabricated units provide? 8. Why is it in Britain that some station buildings are severely criticized? 9. What can you say about the architectural design of the railway terminals in Moscow? 10. Which of them are particularly remarkable and why?

3. Прочитайте текст (с) без словаря (5 мин), опишите новое
TEXT B. REBUILDING THE BIRMINGHAM NEW STREET STATION

(1) The Birmingham New Street Station was built as far back as 1854. While erecting the building the designers gave particular attention to its outward appearance. Being richly decorated, however, the station in many respects was not convenient for passengers. Moreover, in the course of time as the number of arriving trains increased the station building could not cope with the growing flow of passengers. So the terminal had to be rebuilt.

(2) The new Birmingham Station is of recent construction. Wide application of modern materials for finishes enabled the designers to make the building remarkably attractive. Unlike the old station the new one has been greatly expanded (расширять). No wonder that a large volume of work was involved in its reconstruction. The whole process of construction being mechanized, the hard labour of the workers was greatly facilitated. The rebuilding of the station was considerably speeded up thanks to a wide application of prefabricated units.

(3) Both the tracks and the platforms are now located below the street level. A great concrete building erected above them is supported by more than 200 columns. Large double glass doors lead to the main hall with the information centre, the ticket office, the waiting-rooms and other conveniences for passengers. In order to get to the platforms the passengers use escalators. Now the Birmingham New Street Station is regarded one of the most remarkable railway terminals in Britain.

4. Прочитайте текст (с) без словаря (5 мин) и перескажите его по-английски.

TEXT C. THE RECONSTRUCTION OF THE KURSKY TERMINAL IN MOSCOW

(1) As is known, all the nine railway terminals in Moscow were erected many years ago. As they were unable to cope with the increased flow of passengers, some of them were reconstructed whereas others are to be rebuilt in the near future.

(2) The Kursky terminal was the first to be reconstructed. While designing the new building the civil engineers and architects faced a lot of problems which were to be solved in order to make the terminal convenient for passengers and attractive. One of the most important tasks was to make it capable of servicing a great flow of passengers going to the Black Sea Coast. For this purpose the main hall was considerably expanded, and now it can
accommodate up to 6,000 passengers.

(3) The travelling public is provided with numerous conveniences: the information centre, the waiting-rooms, the restaurant, a large number of automatic baggage cells (камера багажа), etc. There are enough ticket windows so that passengers can reserve tickets in a few minutes.

(4) The station handles now about 40,000 long-distance passengers and 750,000 suburban passengers daily. The designers provided for different platforms to service suburban and long-distance passengers thus facilitating the problem of train operation.

(5) Being finished with glass and aluminium, the new building of the Kursky terminal is now regarded one of the most remarkable and modern buildings in Moscow.

Unit 5. Underground Railways

Слова для запоминания:

1) as – так как;
2) propose – предлагать; proposal – предложение;
3) few – немного, мало; a few – несколько;
4) surface – поверхность;
5) fill – наполнять; full – полный;
6) while – пока, в то время как;
7) experience – опыт (работы), испытывать;
8) cost – стоимость; costly – дорогой, дорогостоящий; construction cost – стоимость строительства;
9) coach – пассажирский вагон;
10) narrow – узкий;
11) haul – тянуть;
12) ensure – обеспечивать, гарантировать;
13) frequent – частый;
14) rapid – быстрый;
15) subway – метро;
16) nowadays – в наше время, теперь;
17) clean – чистый;
18) initiate – начинать, приступать; initial – первоначальный; initial cost – первоначальная стоимость;
19) encounter – сталкиваться;
20) compose – составлять (из);
21) assist – помогать, содействовать;
22) complete – завершать;
23) still – еще, все еще;
24) handle – перевозить; handle the traffic – осуществлять перевозки;
25) average – средний;
26) compare – сравнивать; compared with (to) – по сравнению с;
27) examine – осматривать, исследовать;
28) perfect – совершенствовать, улучшать; совершенный, безупречный;
29) scale – масштаб; on a large scale – в большом масштабе;
30) continue – продолжать(ся); continuous – непрерывный, длительный.

1. Прочитайте текст (4 мин на каждую часть) и кратко передайте на русском языке содержание каждого абзаца.

TEXT A. UNDERGROUND RAILWAYS

I

(1) The underground railways as a kind of city transport appeared in the second half of the 19th century. The first underground system was proposed for London by Charles Pearson in 1843. But most people criticized the project. It was spoken of as a fantasy. Indeed, when constructed, the Metropolitan line, as it was called, was not a success. It was a short distance railway, only a few miles in length, and Londoners went on travelling by surface transport as they feared to get deep under the ground. But this situation did not last long. Wishing to attract more passengers to the underground railway Alfred Stanley, General Manager of the Metropolitan line, filled the stations with flowers and wild animals in cages.

(2) While travelling, however, public experienced many discomforts. The tunnels were made as small as possible in order to reduce construction costs. The coaches themselves were small and narrow. No wonder that people called this underground line a "sardine-box railway". The small windows in the trains were made in the roof so that passengers could see nothing. The oil and gas lamps used gave little light. So passengers wishing to read, while travelling, had to take candles with them. Besides, the steam locomotives filled the tunnels with steam and smoke. It was this discomfort that later on made engineers introduce electric traction for hauling trains on underground railways.

(3) When put into service, electric trains eliminated steam and smoke and ensured a much more frequent service for passengers. Since that time the construction of great rapid subway systems in such great cities as London, New York, Berlin and Moscow has become practicable.

II

(4) Nowadays one of the most highly developed underground systems in the world is that of Moscow. Its beautiful architecture and cleanliness are well known. All stations are finished in marble and granite with mosaic decoration.

(5) Work on the first section from "Sokolniki" to "Central Park" was initiated in 1932. While the workers were building this line they encountered
many engineering difficulties because of soil conditions: much soil was composed of running sand. According to the project almost all lines were to be built close to the surface. However, some sections had to be laid in deep tunnels because of geological conditions. More than 75,000 men and women took part in the construction of the Moscow Metro. On Sundays they were assisted by thousands of volunteers. The construction of this line was fully completed in 1935.

(6) The Moscow Metro consists of a circle line with twelve stations and other lines radiating from the centre to the countryside. The total length of metro lines in Moscow is now nearly 300 km. Construction work is still going on.

(7) The Moscow Metro handles several millions of passengers a day. At peak hours trains are to run with intervals of about 80 seconds. Stations are further apart than those in London so that trains run at a higher average speed compared with that developed by underground trains abroad. For greater safety of travel all trains on the Moscow Metro are to be regularly examined.

(9) The Russian Metro is equipped with the latest machinery and has a perfect air-conditioning system. Experiments are being carried out now on a large scale with an automatic driver, i.e. an electronic computer controlling all train movements. There is no doubt that the modernization of the Moscow Metro will continue and looking into the future we can see the time when a system of automatons will provide a more efficient public service on our Metro.

2. Прослушайте вопросы и ответьте на них, согласно тексту.

3. Ответьте на следующие вопросы.
   1. What were the function of London’s Underground during World War II? 2. What was done to make the people’s life in London’s Underground as comfortable as possible? 3. Was London’s Underground a less efficient means of city transport during World War II? 4. How was safety ensured on London’s Underground during the five years of the war?
TEXT B. LONDON'S UNDERGROUND IN WORLD WAR II

(1) For many years of its existence London's Underground was the most popular and efficient means of public transport in the city. However, during the five years of World War II it played a far more important part in the life of England's capital than in the pre-war period.

(2) In those hard days thousands of Londoners had to spend nights in London's Underground. Besides, many ancient books and rare collections from the British Museum spent the war in the underground tunnels. Some of the unused tunnels 5 miles in length were occupied by a factory producing airplanes.

(3) Life for the people at the 79 stations was made as comfortable as possible. There were sleeping accommodations and a clinic at these stations. Special trains carried food supplies to 124 canteens (столовая).

(4) The operation of London's Underground was so perfectly organized that even in the worst days of the war it was handling its normal volume of traffic during the day and was used as home by 177,000 people every night.

(5) Great efforts were made in order to ensure a safe operation of the whole system. The underground railways themselves were prepared for any emergency (аварийный) situation. They had duplicate control and power supply systems. In order to reduce the danger of flooding (наводнение) the tunnels near the Thames were equipped with-isolating doors. All London trains had special reduced lighting for use on the track sections running on the surface.

4. Прочитайте текст (c) без словаря (4 мин) и ответьте по-русски на вопрос, почему в Москве в 20–30-х гг. были трудности с городским транспортом и каким образом удалось ускорить темп строительства метро.

TEXT C. TRANSPORT DIFFICULTIES IN MOSCOW IN THE 1920's AND 1930's

(1) In the 1920's the transport situation in Moscow was difficult. Indeed, very few buses were in operation in Moscow. Not many people had their own cars. There were no city railways. However, every year 150,000 suburban passengers used railway stations, and they needed an efficient system of city transport.

(2) In 1930, the trams handled 90 per cent of the passenger traffic in the capital, and they were overcrowded (переполненный). Besides, the system was often fully paralysed in winter because of heavy snowfalls.

(3) In order to perfect the city transport a project of building Metro in
Moscow was proposed. According to this project the construction of the underground railways was to be initiated in 1932.

(4) Initially, the construction of the metro system went on slowly. The metro builders encountered many difficulties because they had no experience in building underground railways. But during the second year the work progressed more rapidly thanks to mechanical equipment which was used on a large scale. Most of this equipment was developed and produced in the USSR. Besides, the workers themselves became more experienced.

(5) Nowadays the advantages of the Moscow Metro are well known to everybody. Our Underground is the most beautiful and efficient transportation system compared with other subways abroad.

Unit 6. Automation and Computerization on Railways

Слова для запоминания:
1) device – устройство, прибор;
2) perform – совершать, выполнять;
3) complicated – сложный;
4) control – управлять, регулировать;
5) transmit – передавать; transmission – передача;
6) employ – использовать;
7) sound – звук;
8) fault – авария, повреждение; faulty – дефектный, неисправный;
9) occur – происходить, случаться;
10) (the) only – единственный;
11) require – требовать;
12) able – способный;
13) ability – способность;
14) data – данные;
15) process data – обрабатывать данные;
16) various – различный, разнообразный;
17) vary – изменяться;
18) emergency – авария, крайняя необходимость;
19) supply (with) – снабжать, поставлять; тех. – писать;
20) in case of – в случае;
21) intend – предназначать, намереваться;
22) reliable – надежный; rely (on, upon) – полагаться.

TEXT A. AUTOMATION AND COMPUTERIZATION ON RAILWAYS

(1) Nowadays one can hardly find fields in human activity where electronic machines or devices are not used. More and more hard and time-consuming operations performed by man some time ago are now transferred to machines. Complicated calculations, logical operations, weather forecasts and
many other jobs are being increasingly performed by computers.

(2) The development of the machines which can carry out human functions is well under way in Russia. Here are a few examples of using computers on the railways.

(3) The first automatic locomotive driver was designed and successfully tested in Russia. Under this system, the electronic computers installed in the trains start and stop the trains and control their speeds.

(4) Russia is also among the first countries to develop and use the so-called auto dispatcher. Driverless trains controlled by electronic computers are operating at the Tashtagol ore mine. Installed in the mine, the auto-dispatcher controls the movement of each vehicle and ensures the optimum efficiency of its operation. A special transmitter is employed to give a sound signal if any fault occurs. Under this system only one human dispatcher is required to keep the traffic under control. There is no need to say that the driverless trains described open up great prospects on railways.

(5) Traffic control is not the only job the computers are able to do on railways. They are now most widely used to automate sorting yards operations. Some time ago the sorting of goods trains at stations was a very complicated job and the operators were physically unable to process all the data received by a station. Computers have come to their aid.

(6) The problem of training locomotive drivers has been greatly facilitated by means of the electronic technique known as simulation. Under this system the locomotive-simulator is equipped with a computer and other electronic devices. The driver taking a test is to push a button to begin the test. Immediately a moving picture appears on the screen in front of him. The film simulates various operating conditions and the driver learns when he has to apply the brakes, increase or decrease the train speed, turn right or left, stop or restart the train. The programme of "the computer must provide for emergency situations in order to instruct the driver how to avoid accidents.

(7) The railway power supply system* is the sphere where automation should be applied on a wide scale. Most railway substations supplying trains with electricity are now automatically controlled. In case of an emergency situation the automatic devices are immediately to shut down the faulty equipment.

(8) In Russia an automated system, called the "Express", which is intended to reserve railway tickets has been developed. This system saves people much time and there can be no doubt that in the near future ticket reservation will be completely mechanized.

(9) We are continuously getting nearer to the all-machine age. Electronic computers are being introduced for making time-tables and schedules, calculating wages, designing locomotives and cars, controlling production processes and so on. Now specialists have designed new better and quicker electronic computers which ought to be applied to all spheres of railroad
engineering. It is their wide use on transport that is to turn our railways into the most reliable and efficient means of communication.

1. Прослушайте вопросы и ответьте на них, согласно тексту.
1. What operations are now transferred to electronic machines in industry, research and on transport? 2. What functions does the autodriver perform? 3. Why is the introduction of the autodispatcher economically justified? 4. How do computers help the operators at the sorting yards? 5. What do the automatic devices at railway substations do in case of an emergency? 6. What is the advantage of introducing the Express system? 7. What may turn our railways into a more reliable and efficient means of communication?

2. Выберите из текста два-три примера использования автоматики на железнодорожном транспорте и расскажите о каждом из них. Свое сообщение стройте по следующему плану:
1) The aim of the system (project).
2) The functions performed by the electronic computer (automatic device).
3) The advantages of the system (project).

3. Прочитайте текст без словаря (6 мин) и скажите, какая транспортная система рассматривается в тексте, как она функционирует и что делает эту систему удобным видом городского транспорта.

TEXT B. AUTOMATIC PUBLIC CARRIER
(1) International transport exhibitions have turned into a useful tradition among transport engineers. The principal aim of these exhibitions is to demonstrate various achievements in the field of surface transport including railways.
(2) At one of the international exhibitions France demonstrated a new city transportation system intended for towns with up to 800,000 people. The system is automatic and operates on its own rail track.
(3) The vehicles are equipped with four wheels and driven electrically with the aid of a cable laid parallel to the track. These vehicles run continuously along the cable at a distance of 100 m from one another and are able to develop 35 km/h.
(4) While reaching the station the car is automatically disconnected from the cable and decelerated (замедлять). At the platform it moves at a speed of 0,3 m/h when passengers are getting on the car. As soon as the passengers have entered the car, the doors automatically close and the car accelerates until it attains the speed of 35 km/h. Then a specially designed automatic device connects the car to the cable.
(5) Controlled by computers, the system is quite reliable. A large number
of electronic devices eliminate any risk of an accident or emergency situation. The track can be built above the city streets, under the ground or at ground level. This makes the system particularly convenient for the streets with heavy traffic. The track itself is of light construction and the platforms are short. So the construction cost of the whole system is rather cheap.

4. Прочитайте текст без словаря (3 мин) и перескажите его содержание по-русски.

5. Определите значение выделенных слов и словосочетаний по контексту.

TEXT C. AUTOMATIC TRAINS IN LONDON

(1) One of London's underground railways – the Victoria Line – was put into public service in 1968. The characteristic feature of this line is the automatically-driven trains and the automatic inspection of tickets.

(2) The line is serviced by eight-car trains controlled automatically with the aid of coded signals which are received from the running rails. Special devices installed in front of the trains pick up these signals, set the speed of the trains or stop the train in case of any emergency.

(3) Each train employs a single operator who is to open and close the doors at stations. If any fault occurs, he can drive the train in the usual way.

(4) Thanks to the automatic equipment a minimum distance between the trains can be safely provided. Numerous electronic devices are intended to operate the whole system and to avoid (избегать) any emergency which may lead to a serious accident.

6. Опираясь на сигналы, определите явные и неявные сказуемые в каждом предложении данного текста.

(1) Today, we travel from one place to another quite easily. But for thousands of years, people had to walk or travel in horse-drawn carriages.

(2) In 1829, Shillibeer started the first bus service in London. The bus introduced by Shillibeer looked like a large carriage.

(3) Everybody knows that the English buses are of red colour and are very high, as they are double-decked buses. But the upper deck of the early buses had no roof. The passengers were given raincoats to put on if it started to rain.

(4) In 1885, the Londoners saw the first petrol-engine buses. In 1919, they achieved a speed of 12 mph.

(5) As to the first important passenger railway in England it was the Liverpool and Manchester Railway. In 1829, the company offered a prize of £ 500 for the best steam locomotive for this railway. The prize was
won by G. Stephenson.

(6) Today, people use electric and diesel traction on their railways because electric and diesel trains attain a very high speed.

7. Определите функцию слов, оканчивающихся на – ed и переведите предложения.
   1. The newly designed locomotive is intended for passenger service. 2. The simulation technique ought to be used more widely for training locomotive drivers. 3. The electronic computer, if installed in the locomotive, can perform the control functions. 4. It is expected that by the end of the year the production of the new passenger cars will have been initiated. 5. The equipment tested proved reliable in operation. 6. The track cannot keep its position if placed directly on the earth. 7. The ties on the railroad track are laid on a crushed rock bed called ballast which is considered a very necessary element of the permanent way. 8. When widely introduced, containerized services will make the transportation of goods much easier. 9. The data obtained were transmitted to the central computer which supplied all information required. 10. Before opened, the railways ought to be carefully inspected. 11. When fully computerized, the sorting yards will be able to provide high efficiency and reliability of their operations. 12. Applied to railways the electronic devices have facilitated many transportation processes.

8. Укажите предложения с модальными глаголами, выражающими необходимость совершения действия, и переведите их.
   1. In the future the operation of railways should be turned into a fully computerized branch of a country's national economy. 2. Unlike the existing vehicles some trains of the future will have no wheels. 3. Numerous calculations had to be made while designing the vehicle. 4. To improve the passenger service there must be more ticket windows at railway stations. 5. The aim of the research was to develop a reliable power supply system. 6. The device is to perform two functions. 7. One ought to remember that automation means higher efficiency and reliability. 8. In recent years, some of the sorting yards have been computerized. 9. To facilitate traffic between big cities and their airports some more efficient mode of transport will have to be developed. 10. One should not forget that our country is a pioneer in diesel traction. 11. There existed a number of projects for strange railways in the past; according to one of them the power sources were to be installed along the track. 12. The general opinion (мнение) was to enclose the high speed trains in tubes.

Unit 7. Train Operation
Слова для запоминания:
1) accident – несчастный случай, авария;
2) number – номер, число, количество;
Accidents which took place on the railways in the early days made specialists devise a great number of systems and devices in order to ensure the safe operation of trains and to simplify the task of directing train movements. One of the ways to facilitate the problem of train operation is that all railroads, except the very short ones, are divided into sections or divisions operated just as a small railroad. The train with a long run is operated over many divisions and may change locomotives and crews several times in the course of its journey.

A railroad runs two principal kinds of trains: regular trains and extra...
trains. A regular train is a scheduled train, i.e. a train listed on the railroad time-table. Regular trains are all numbered. An extra train is not scheduled in the time-table; special trains, work trains and wreck trains are examples of extra trains.

(3) The list of times at which a regular train is to arrive at and leave a station is known as the train's schedule. The printed schedules of the regular trains form the time-table.

(4) The making of a time-table is the most complicated job in the operating business. In order to make up a time-table many factors have to be taken into account. The fact is that the railways make up different time-tables for the summer and for the winter service and that the weekday time-table is not the same as that of Saturday and Sunday. Besides, one should not forget that express trains and slow local trains have to run on the same tracks. And it is these tracks which are also used by freight trains, whether they are slow or fast, diesel-powered or electrically-operated. Having taken into account these and many other factors one may get an idea what difficulties are encountered when making a time-table.

(5) Besides the making of time-tables the operating business also includes the making of separate working programmes for locomotives and train crews, the planning of regular switching operations and so on. In other words, the operating business comprises all the problems connected with the safe and efficient operation of trains, whether passenger or freight.

II

(6) That the problems of railway operation must be now solved with the use of the most up-to-date technical aids is clear to everyone. Being introduced on railways, the technical aids greatly facilitate the task of directing train movements and make the job of the railwaymen simpler and more productive. The technical aids, which provide the so-called telecommunication service, comprise the telephone, the radio and the television (TV).

(7) Of all technical aids it is the radio which plays the most significant part on modern railways. While the telephone system is principally made use of for control purposes the radio has found a wide application practically in all aspects of railway operation.

(8) Today, locomotives are equipped with both transmitters and receivers and the locomotive drivers can communicate with at least the nearest station along the track or with other trains on the route. In case of an emergency the engine driver can radio a warning to other drivers or ask the dispatcher for help. Thus thanks to the radio the danger of train collisions has been substantially decreased.

(9) The radio has also proved very useful in the switching yards where
much time is saved thanks to constant and direct communication between the engine drivers and the operators on duty. The sorting of goods trains and separate cars is now unthinkable without radio.

(10) One of the radio devices being commonly used in the switching yard is the walkie-talkie. This individual radio helps the car inspector do a better job and saves him much time. Having found a damaged car the car inspector can radio other workers for help. Another very helpful radio device is the so-called loud speaker. The loud speakers are installed at passenger stations where they give the passengers regular information on the incoming and the outgoing trains.

(11) The TV is increasingly applied in the switching yards. Some years ago, when the train arrived at the switching yard, a man had to walk along the train, checking car after car. Now an operator in an office can watch a long line of cars directly on the television screen and check them off comfortably and accurately.

From the above-said it becomes clear that it is telecommunication that greatly contributes to the safety and the efficiency of train operation and facilitates the work of railwaymen.

1. Прослушайте вопросы и ответьте на них, согласно тексту а.

1. What was the purpose of applying numerous devices to the operation of railways? 2. How was the problem of railway operation simplified? 3. How is a railroad division operated? 4. What is the difference between the regular trains and the extra trains? 5. What factors must be taken into account when making a time-table? 6. What jobs does the operating business include? 7. What is meant by the telecommunication service? 8. What two operations in the switching yard are simplified thanks to the radio? 9. What radio devices find application on the railways and what functions do they perform? 10. Why can the drivers on modern locomotives decrease or avoid the danger of train collisions? 11. How does the TV facilitate the work of the car inspector?

TEXT B. THE APPLICATION OF THE TELEGRAPH TO RAILROADING IN AMERICA

(1) In 1832, Samuel F.B. Morse, a famous American painter, was going home from Europe on the packet-boat "Sully". The passengers were talking about electricity – a topic of popular interest in those days. Suddenly, an idea came to Dr. Morse – why not to use an electric current for transmitting information by making its interruptions visible? Before his arrival in America, Morse devised a model telegraph, the same in principle as his practical telegraph which he made twelve years later.

(2) The railways were quick to see the advantages of Dr. Morse’s invention. The thing is that in those days a train of lower class could
not leave a station before the arrival of a more important train. The result was that many trains were late when arriving at a station.

(3) In September 1851, however, Charles Minot, a railway official, was on the train going to the West. The trains stopped near New York to wait as usual for a more important train. Suddenly Minot remembered about the telegraph line opened a short time before. He telegraphed the operator at the station 14 miles west asking him if the opposing train had left the station. Having received the negative answer Minot told the operator to hold the opposing train. Then he asked the locomotive driver to start his train. The driver refused (отказаться) to do it because he was afraid that the train might collide. Minot himself drove the train. Telegraphing the operator several times he brought the train to the place a full hour ahead of schedule. Thus the system of directing train movements by telegraph came in practical use in America.

TEXT C. THE TELEPHONE FINDS APPLICATION ON RAILROAD

(1) The electromagnetic telephone was devised by Dr. A.G. Bell. It was in March, 1876, that Dr. Bell sent his first message (сообщение) by phone. A year later the first telephone apparatus was tested on the Pennsylvania railroad and then in California. Using the phones the track-men could warn the train crews of snow slides (оползни).

(2) The next year Bell produced an improved phone. The tests showed that the new apparatus was more speedy for dispatching than the telegraph.

(3) The regular operation of trains by phone was introduced in 1887. It proved so efficient that four years later the phone found a practical use on the train for providing direct communication between the conductors and the locomotive driver.

Unit 8. Carriages and Wagons
Слова для запоминания:
1) carriage – пассажирский вагон; wagon – грузовой вагон;
2) top верх, верхняя часть; bottom – низ, нижняя часть; дно;
3) pull – тянуть, тащить;
4) cover – покрывать, закрывать;
5) protect – защищать, предохранять;
6) general – общий; обычный; главный; generally – обычно; главным образом; general – purpose a универсальный, общего назначения;
7) roof – крыша; floor – пол;
8) tank – бак, цистерна;
9) liquid – жидкость;
10) through – сквозь, через; с помощью;
1. Прочтите текст (5 мин на каждую часть) и скажите: а) какие три типа грузовых вагонов использовались на первых железных дорогах и какие типы грузовых вагонов эксплуатируются на железных дорогах в наши дни (часть I); 
            б) о чем говорится в каждом абзаце части II.

TEXT A. CARRIAGES AND WAGONS

I

(1) The cars used on the early railways were very much like the stage-coaches and wagons travelling on ordinary roads. Although drawn by horses, these vehicles had flanged wheels which kept them on the rails.

(2) The very first freight cars are known to have been used in coal mines in England. They were open-top wagons which had wooden wheels and were pulled by horses along wooden rails. They were followed by platform cars, also known as flat cars, upon which the freight was piled and covered with tarpaulin to protect it from the weather. As the goods often fell off and were easily damaged, the platforms were fitted with low sides and ends. Later, covered cars
came into existence.

(3) As time went on and railroads had to carry more and more freight, bigger and better cars were invented for hauling different kinds of goods. Today, the railroads have several classes of freight cars, there being many varieties in each class.

(4) The box car is considered to be the most common type of covered car. It is a general-purpose car intended to carry all kinds of ordinary goods which must be protected from the weather. A special type of box car is a refrigerator car used for hauling food products. The walls, floor and roof of this wagon are air- and waterproof to protect goods from the heat of the outside air.

(5) Another type of car is a tank car intended for liquid goods. The long cylindrical tank of the car is filled through an opening on the top and emptied through a special device in the bottom.

(6) Coal, ore, gravel, and other similar goods are known to be conveyed in open-top cars, the principal types of these being the gondola and the hopper car. Both types are designed for mechanized loading and unloading and, therefore, built especially strong and durable.

(7) The simplest type of car is the flat car. Being usually employed for transporting rails, beams, timber, and heavy machines, they, if fitted with special devices, can also carry containers. The container traffic is now coming into wide use on all modes of transport because it reduces the cost of loading and unloading goods and decreases the danger of their breakage. The fact is that goods are packed into containers at factories or warehouses and are not disturbed while in transit, thus being conveyed from "door-to-door".

(8) In addition to the normal-type wagons there exist special freight cars for special kinds of goods. The example of a special-type car is sure to be a double-deck car used to carry automobiles. The conveyance of automobiles by rail has turned out to be more economical than by road.

II

(9) As mentioned above, the early passenger cars were copied after stage-coaches and were very small and uncomfortable. In England, the carriages for the first class passengers had three compartments with soft seats and doors at either side. There was a high seat at the back for the guard, the baggage being carried on the roof. The second class carriages also had roofs, but the sides were low and the seats were hard and primitive. As to the third class passengers, they had to ride in uncovered wagons having no seats at all. The early trains had neither lighting nor heating.

(10) Some decades later, about 1840, there appeared carriages which looked more like today's cars. They had the body we are familiar with in modern vehicles. The body was mounted on two four-wheel trucks. Inside, the carriages were open from end to end and the seats were arranged along either side. The carriages were lighted by oil lamps, heated by stoves, and had...
wash-rooms at both ends. These cars made it possible for the railroads to carry much more passengers in a single train, and the increased comfort and conveniences made it possible for the trains to travel longer routes.

(11) The prototype of the modern sleeping car is known to have appeared in the middle of the last century and George M. Pullman, an American publisher, is regarded to be its inventor.

(12) We know the passenger rolling stock of today to comprise several types of cars. There exist sleeping and dining cars, coaches for day and night service, saloon coaches for tourists, etc. The modern rolling stock is built with two types of inside arrangement. One is the compartment type with a side corridor, and the other is the open vehicle with a central passage.

(13) Many innovations have been introduced in car construction since the early days. Modern carriages are made of light-weight steel, aluminium and plastics. The application of these materials has resulted in considerable reduction of the rolling stock weight and, in addition, has increased the resistance of cars to corrosion. That is to say, these materials and design improvements have provided better performance of cars and decreased maintenance costs.

(14) That railroad travel depends largely upon the standards of railroad cars and service seems to be quite evident. At present, most long-distance trains are being furnished with fluorescent lighting and air-conditioning, the former gives a considerable saving in power compared to conventional lighting. As regards the air-conditioning, it is likely to be one of the most remarkable developments being introduced on railways. Although it involves extra weight and cost, its application is justified by the comfortable conditions of travel. If universally introduced, these and other improvements will allow railways to compete more successfully with air and road transport.

ПРИМЕЧАНИЯ

1) the stage-coaches – почтовые кареты (дилижансы);
2) flanged wheels – колеса с гребнем (круговым выступом, удерживающим колесо на рельсе);
3) sides and ends – боковые и торцевые стенки вагона;
4) the box car – крытый грузовой вагон;
5) the gondola car – полувагон;
6) the hopper car – вагон-хоппер (с разгрузочными люками в полу);
7) a double-deck car – двухъярусный вагон;
8) four-wheel trucks – двухосные тележки вагона.
From the History of Car Building in Russia

(1) In Russia, the construction of passenger cars was started in 1846 at the Alexander Works which was also the first to build steam locomotives and wagons.

(2) The first carriages were vehicles without compartments. They were mounted on two trucks and had a body made of wood. Each carriage seated 90 passengers. An empty vehicle weighed 22 tons.

(3) Ten years later, a number of passenger cars were supplied to the Russian railways from abroad. These cars had neither heating nor toilet rooms. They proved unsuitable for the Russian winter and had to be reconstructed later.

(4) In the middle of the sixties, all the carriages operated on the Moscow – Petersburg railway were produced in Russia. Unlike the cars operated in the European countries these cars were heated by stoves and had toilet rooms.

(5) Of significant importance for the history of the car building industry in our country were the Kovrovsky Workshops. The Kovrovsky Workshops were the first to introduce steam and water heating, lighting and roof ventilation in cars. The cars turned out by the Workshops were durable and had good performance characteristics.

3. Прослушайте вопросы и ответьте на них согласно тексту а.

1. What three classes may the freight cars be divided into? 2. What types of cars do the covered cars comprise and what goods do they carry? 3. What is the characteristic feature of a refrigerator wagon? 4. In what way are tank cars filled and emptied? 5. What are the two principal kinds of open-top cars and why are they built very strong and durable? 6. What are the advantages of the container traffic? 7. What is the purpose of developing special-type cars? 8. Did the early passenger cars look like today's cars? 9. Where was the baggage carried on the early carriages and who looked after the baggage? 10. Had the early trains lighting and heating? 11. Why could passengers travel longer routes in the cars which appeared in the middle of the last century? 12. What was the inside arrangement of these cars? 13. What are the two types of inside arrangement in modern carriages? 14. What are the advantages provided by the application of new materials in car construction? 15. Why is the introduction of fluorescent lighting and air-conditioning justified in spite of their high cost?

4. Подготовьте сообщения на следующие темы:

1. The very first freight and passenger cars.
2. The modern freight rolling stock.
3. The innovations introduced on modern carriages.

5. Прочтите текст (с) без словаря (5 мин) и скажите: (а) как обеспечивалось раньше и обеспечивается сейчас охлаждение грузов в
TEXT B. REFRIGERATOR CARS

(1) All of us are familiar with a refrigerator car which is known to be a special type of covered car. Before the refrigerator car was invented, some 100 years ago, it was impossible to convey fresh meat, fruit, vegetables and other food products for long distances.

(2) In old days, the refrigerator car used ice or a mixture of ice and salt (соль) to keep the goods cold. Then dry (искусственный) ice was made use of. Modern cars are furnished with refrigerator units which are very much like the electric refrigerators used in our homes.

(3) The refrigerator unit is driven by a diesel engine and is provided with automatic controls which maintain the proper temperature in the freight compartments.

(4) Thanks to the heat insulation (изоляция) the refrigerator cars may be used to carry fruit and vegetables in the winter time. The insulated body of the car reliably protects the goods from the outside cold. But in countries where winters happen to be very cold the refrigerator car may be provided with electric heating.

(5) In Russia, there are special five-car refrigerator sets (секция) equipped with refrigerating and heating units. The train is composed of one diesel car and four refrigerator wagons, the former is arranged in the middle of the train and is used for the centralized supply of power to all the wagons of the train.

6. Прочтите текст (с) без словаря и перескажите его по-английски (6 мин).

TEXT C. SLEEPING CARS

(1) One of the most important railroad inventions is sure to be a sleeping car. The earliest trains had no sleeping cars. There was really no need for them for the early railroads were short, no journey lasted more than a few hours. As railroads increased in number and better cars were built, the passengers could make longer journeys, and night travel became possible.

(2) We know of the modern sleeping car having been invented by George M. Pullman. G. Pullman built his first car in 1859 remodelling a stage-coach body for this purpose. This car did not look like the cars we are familiar with and was much simpler in design. However, it proved to be so much more suitable for long-distance travel that passengers gladly paid the extra money for
travelling in it.

(3) Encouraged by his success, G.M. Pullman built a far longer sleeping car which he named the "Pioneer". When the "Pioneer" was first taken from the shop, it appeared to be too wide and too high for many of the bridges and station platforms. But the officials were so greatly pleased (довольный) with this car, that they decided to rebuild the bridges and platforms.

(4) After having solved the problem of sleeping cars, Pullman turned his attention to providing passengers with food. He was the first to design and build the so-called "hotel" car, which was followed by a "restaurant" car. The hotel car contained at one end a small kitchen from which passengers could be served meals (еда) in their seats. Pullman's restaurant car may be regarded the forerunner of the modern dining car which is found practically in all of today's long-distance trains.

КОНТРОЛЬНЫЕ УПРАЖНЕНИЯ

1. Переведите предложения, обращая внимание на глагольные формы с суффиксом -ing.

1. The coaches running the service on the first underground line in London had first, second and third class compartments. 2. The project being worked out provides for the application of atomic energy for traction purposes. 3. Being much stronger than the conventional wooden cars the steel cars contributed a great deal to increased safety. 4. Having increased the efficiency of the engine the designers improved the performance of the locomotive. 5. While running the tramcars produce much noise. 6. Being fitted with numerous electronic devices and automatic control, the new locomotive is one of the up-to-date motive power units. 7. Having been built in 1961, the locomotive is still capable of hauling long and heavy trains. 8. The advantages of the diesel engine being evident, the railroads were quick to adopt it for traction purposes. 9. The possibilities of the steam locomotives exhausted, they were replaced by electric and diesel locomotives. 10. With the experiment being completed, it became clear what railroads could expect of this new form of motive power. 11. The body of the car has a high strength, being covered with steel sheets. 12. The higher efficiency of fluorescent tubes has resulted in their being widely applied to lighting carriages. 13. The building having been erected in the last century, its architectural design is different from that of the surrounding (окружающий) structures. 14. The first diesels were capable of doing the same work as the conventional steam locomotives being built at that period. 15. The scientists took great interest in the newly-designed prime mover because of its having good characteristics as regards reliability. 16. Burning organic fuel the thermal power stations cause air pollution. 17. Experimenting with high speeds has involved changes in all braches of railway engineering. 18. The problem of railway transportation should be studied as an economic and engineering
problem, with attention being given to the economy of transportation and to the construction and maintenance of railways. 19. At present, railroads make use of both the open-top hopper cars and the covered hoppers, the latter being primarily employed for conveyance of goods which require protection from the weather. 20. Not many people know of the internal combustion engines having been originally used as stationary engines. 21. With the fuel being burnt inside the cylinders, the engine has an increased efficiency. 22. Cleanliness being the basic feature of electric traction, electrification reduces the maintenance expenses of the rolling stock and the railway buildings.

2. Переведите предложения с инфинитивными конструкциями.

1. It is necessary for the railways to have wagons that may be used in combined road/rail traffic. 2. The new locomotives to be brought into use on our railways are to be sufficiently powerful to haul long goods trains. 3. The Soviet Union was the first to build and test the main-line diesel locomotive. 4. To compete successfully with the conventional power plants the A-power plants must be quite safe for people. 5. The mechanical engineers want further research to be carried out into new kinds of motive power. 6. The Trans-Siberian trunk line is regarded to be the most significant railway handling traffic between Europe and Japan. 7. At the container terminal (станция) one can see huge cranes transfer heavy containers from flat cars to road vehicles. 8. The next step to be taken was the replacement of wood by plastics for the interior finishes of passenger cars. 9. In 1972, the London Underground was reported to have put the new Victoria Line into public service. 10. We know the railways to use the electric rolling stock on the most heavily used trunk lines. 11. For low temperature to be maintained inside the refrigerator cars their walls, roof and floor must be airproof. 12. The ways to perfect the performance characteristics of the main-line electric locomotive are expected to be the key topic of the conference. 13. After the test runs the locomotive was found to have some serious drawbacks in its design. 14. The data to be obtained in the course of the experimental runs are to be used later for improving the passenger rolling stock. 15. Despite its high speed the gas-turbine locomotive is unlikely to find a wide application because of producing much smoke and noise. 16. The a.c. to d.c. conversion appears to be performed at the railway substations; the latter are also known to have transformers to lower the voltage of the current supplied by the transmission line.

3. Переведите следующие сложноподчиненные предложения.

1. Quite recently the newspapers wrote a new tramcar could seat 300 passengers. 2. That Gakkel invented the first trunk-line diesel locomotive is known to all diesel locomotive designers. 3. The voltage the train power supply depends on must be constant. 4. The disadvantage of a tunnel is that its ventilation is always a serious problem. 5. The flat cars the automobiles are
conveyed on are usually double-deck (двухъярусный) vehicles. 6. The problem to be solved is whether an electric motor, a gas turbine or some other kind of motive power will better meet the requirements of high-speed passenger transport. 7. That the wind, the ocean and the sun are promising sources of energy does not surprise anybody. Nevertheless, what is not quite clear is which of these energy sources will give cheaper electricity. 8. The engineers were not sure if the new discovery was promising. 9. The data which the speaker referred to (ссылаться на) in his report had been obtained in the laboratory after processing the initial data by the computer. 10. That the long-welded rails have a lot of advantages is quite evident: the fewer the rail joints the smoother is the running of trains and the less is the wear of the rails. 11. The specialists spoke of the increased volume of traffic the railways are to cope with in the next decade. 12. The fact is that the train stop device enables the speed to be automatically regulated according to signal indications. 13. The designer asked if the data obtained would be of value for further improvement of the engine cooling system. 14. One of the chief advantages of the electric loco is that we can keep it running for long periods of time. 15. That the transformers can be arranged either inside or outside the substation is their big advantage.

Translation of the Textes with Dictionary in Writting

1. Переведите текст письменно со словарем (18 мин).

From the History of Russian Railways

(1) That vast Siberia is so rich in natural resources always causes surprise among the people from Europe and the USA.

(2) Early in the 20th century Siberia attracted the attention of the American magnate Edward Harriman. He wanted the tsarist government to grant him a concession for the construction of a railway that was to begin in Alaska, go through a tunnel to Chukotka, then to Kolyma, Yakutia and Trans-Baikal.

(3) Such a railway would, of course, have been very valuable for Russia but for Harriman's condition. If the line had been built Harriman would have had in his full possession a twelve-kilometer strip of land on either side of the line for a period of 90 years. With the characteristic American energy Harriman would have liked a real bite out of Siberian pie!

(4) Taking into consideration the length of the line (about 6,000 km) it becomes obvious that, had the tsarist government agreed, Harriman would have got a "strip" larger than the whole of Greece.

ПРИМЕЧАНИЕ
1) would have liked a real bite – хотел бы заполучить хороший кусок.
World's Shortest Railroad

Only a few of us may have heard or read about the world's shortest railroad. It ran in northern New York for a distance of seven-eighths of a mile! The rolling stock handling the service included one locomotive, two open coaches and a baggage car. This rolling stock was supposed to carry ten thousand passengers a year, as well as heavy loads of freight. The railroad connected two lakes spanning the unnavigable part of the Marion River. Steamers were to meet the train at both ends of the line and to transfer passengers and freight. In winter, however, with thick ice covering the lakes, the steamers stopped running and, with them, the world's smallest railroad.

Needless to say that other, more efficient means of transportation should have been used to handle the traffic all the year round. But at that time the line was considered to economically justify its existence. Indeed, it carried its load successfully for nearly thirty years. And it might have performed its duty for many years to come but for the construction of a highway between the two lakes. The result was that the little railroad was out of business.

Improvements in Passenger Car Construction

(1) Steam heating of cars is believed to have come into use in the eighties of the 19th century practically eliminating the danger of fire, even in case of wooden coaches. Besides increasing passenger safety, steam heating made cars much more comfortable, providing even temperature throughout the car.

(2) The early cars are known to have had an open platform at each end, this being especially dangerous in case of train collisions. Later, an enclosed vestibule (закрытый тамбур) was introduced. Its introduction is thought to be another step in increasing safety. The fact is that the introduction of the enclosed vestibule proved to be a very important measure, preventing the cars from damage in case of an accident.

(3) At the beginning of the 20th century, steel began to replace wood in car construction. Engineers understood the use of steel would make the cars much more durable. The steel vestibuled car was found to be rarely crushed even in a wreck. In addition, if properly maintained, steel cars lasted much longer than wooden coaches.
Early Steps of Signalling

(1) You must have read that signals were not used on the early railways when only one locomotive was in use on a line. When the traffic increased, however, people demanded that some form of signalling should be adopted to assure safety.

(2) The first signals employed were railway "policemen". Their job was to provide a certain interval between the trains lest trains should collide. If the line ahead was occupied, the "policeman" stood with his feet apart and with an outstretched arm holding a red flag. Later on, the places where the "policeman" stood came to be known as stations and a red flag suggested the idea of red lights indicating "stop".

(3) As time went on, coloured discs and semaphores were adopted to act as signals. All of them, however, were manually-operated, and that made it necessary for the man on duty to walk a good deal to change their positions. Soon someone advised that the signals should be connected by wires so that any number of them would be worked from one place.

(4) This control from a distance, or remote control, is sure to be a very valuable invention in the railway history for it enabled any required number of signals to be governed from a single point.

5. Переведите тексты на русский язык, обращая внимание на различные функции should и would.

AUTOMATION AND COMPUTERIZATION OF SWITCHING YARDS

(1) The idea of utilizing electronic brains to replace man in numerous spheres of railway operation is an object of intensive study and research now. Here is an approach of Canadian engineers to this problem.

(2) The traffic to and from Canada's Pacific ports has grown considerably in recent years. The modernization of the existing switching yards which should have been made several years ago has not been carried out. That is why the decision was made that the main switching yard would be automated and expanded.

(3) The Canadian specialists suggest that a computer should be installed there as one of the steps to full automation. It is desirable that this computer should continuously control the routing (маршрут) and speed of wagons in the yard. The required train composition and various statistical data would be also provided by the computer lest no errors should be made.

(4) The numerous safety (предохранительный) devices would locate every fault and automatically stop the operations in case of any serious trouble. In order that the operation of this switching yard might be coordinated with that of smaller yards, the latter should be equipped with smaller computers. In this way more efficient control would be ensured.
(5) In addition to greater efficiency and reliability, computerization of switching yards would offer a great deal of other economical benefits.

В

(1) On land, in the air, on the sea – the transportation revolution is on its way (идет полным ходом). If you happened to live in the year 2000, you would be surprised to see a park like city without streets. The key is a network of tunnels beneath the city. Were it necessary for you to go to your office in the morning many miles away from your house, you would ride in an electrically powered car which would follow its programmed route while you are reading a newspaper. Having reached the city edge (конец), you would board a small computer-controlled capsule. The only thing you would have to do is to push a number of buttons on the destination board.

(2) Silently, the capsule would accelerate to 80 mph. Worked by a distant computer, it would ride through long tunnels and take you to your destination.

(3) There is almost no doubt that the computer-controlled vehicles would become a reality since the economic benefits they offer make them particularly promising for the future.

Future of Railway

(1) Many years, ago when railways were coming into use, they were an object of public criticism. People having doubts about steam-operated, railways said that the smoke from the steam locomotives would kill birds and the houses would be burnt up by the fire from the locomotives' chimneys (труба). Travelling by rail would be highly dangerous. A German doctor wrote at that time that it would be impossible for people to watch the trains pass along with out going mad (сходить с ума).

(2) Railways, however, have made a great advance since that time and turned "out to be more advantageous than, any other kind, of land transport. Now one may suppose that railways face a bright future. A network of electrified lines, would, continuously expand. Passenger service would be handled by entirely new vehicles riding with a top speed of 500 kph. Diesel motive power would be used for switching operations and for Hauling trains on secondary lines. Greater importance should be attached in the future to containerized service to prevent goods from being damaged. Probably wireless telephone and television communication with the whole world would be available for any passenger travelling in a long-distance express train. In audition to these benefits, railways would offer many other conveniences to passengers.

(3) Had it been possible for the opponents of early railways to live till
now, they should have admitted that G. Stephenson was right when he said that eventually the railway would replace other means of transportation and it would be cheaper for man to travel by rail than to walk on foot.

7. Переведите текст устно, обращая внимание на различные значения глагола would.

Moving Pavements (тrotuar)

(1) For many years transport engineers thought of the ways to perfect city transport. There was time when they claimed (утверждать) that railed horse-drawn omnibuses (конка) would be more advantageous than the stage-coaches existing at that time. Although that time has already passed, specialists are still thinking about new means of passenger transport in big cities.

(2) Indeed, what will city transport look like in 20 or 30 years? Some engineers suggest the idea of moving pavements. The pavement would consist of two or three strips (полоса) running in both directions along the street. Propelled by electricity, these horizontal escalators would develop different speeds so that a passenger could ride on a slower or faster strip. Were it necessary, the moving pavement would be equipped with seats and other conveniences for travelers. The first lines of such moving pavements might first appear in the streets with the heaviest traffic. Later, they would be operated as a single system serving the city centre. The designers claim that a large carrying capacity and reliability would be the chief advantages of moving escalators. Were they introduced, they would make buses, trolley-buses and other means of surface transport in big cities unnecessary.

8. Переведите текст письменно со словарем (15 мин).

The Electrification of the Pioneer Underground Railway in London

(1) In the 1890's the pioneer steam-operated Metropolitan Line in London began to lose its importance due to the competition of the newly built electric tube railways. So it was a vital need for the Metropolitan to introduce electric haulage.

(2) To show the valuable benefits of the electric rolling stock for this line it was decided to test a m-u train. In the course of the experimental runs the train demonstrated its ability to eliminate air pollution. Besides, it could accelerate rapidly and thus proved more advantageous as regards speeds. The next step to be taken was to choose a power supply system. Most
engineers spoke in favour of the low voltage d.c. to be fed to the trains through the conductor rail.

(3) The electrification of the Metropolitan Line completed, multiple-unit trains composed of well-lit saloon cars (вагон-салон) were brought into use. In spite of the costly reconstruction work, electric haulage made it possible for the Metropolitan Line to win back its passengers.

8. Переведите текст письменно со словарем (18 мин).

Internal Combustion Engines

(1) Not many people know the early internal combustion engines to have run on coal gas (каменноугольный газ). As these engines burnt gas, they had to be located near a gas-making plant and we may suppose all of them to have been stationary engines.

(2) When oil had been found in many parts of the world, an engine was designed that was capable of burning liquid fuel obtained from this new substance. Very soon the internal combustion engines became portable power plants, efficient and compact.

(3) There are different kinds of internal combustion engines. Not long ago the gasoline engine was the most common type used in spite of its serious drawbacks. The engineers consider the high cost of gasoline to be its chief disadvantage. However, it is probably the high cost of gasoline that has encouraged the construction of diesel engines.

(4) We know the diesel engine to be largely used for heavy duties including railway traction. R. Diesel himself expected his engine to find application on railways as one of the principal kinds of motive power.

9. Проработайте грамматические пояснения и переведите текст письменно со словарем (20 мин); помните, что перевод глагола to be зависит от слова, стоящего справа.

The Underground in Rome

The project for the underground line in Rome was first proposed in 1881, but it was only in 1938 that the construction of this railway was initiated. This line was to become an important artery of the capital running, from the Termini, Rome's main railway station, to the "site of" a great exhibition which was to be held in 1942. But the exhibition was not held because of the war, and the construction of the line was stopped until 1946.

While building the railway the workers encountered many difficulties including different structure of the subsoil. So at some places the line had to be laid as much as 54 ft deep.

It is not a well-known fact that the builders found ancient ruins and
statues when they were constructing the underground tunnels. The statues and mosaics discovered were removed, and nowadays they are to be seen at the Termini station.

When completed in 1955, the line was called the Metropolitana. It had ten stations. Electric trains usually composed of two cars were used. But as one of the problems was to handle traffic at peak hours, it was decided to operate seven-coach trains in busy periods.

11. Переведите текст письменно без словаря, обращая внимание на различные значения one (5 мин).

(1) One may say that the electronic computer is one of the most remarkable achievements of the twentieth century. It is a machine which can make long mathematical calculations and can store (хранить) and select information put into it. And it can do this work quickly and efficiently.

(2) But the electronic computers which are now in use are too (слишком) big and too slow. So scientists are working hard to improve the existing machines and develop the new ones faster and more efficient than those we use today.

10. Переведите текст письменно со словарем (15 мин).

**Locomotives to Run on Ice**

In the 2nd half of the last century in Russia there appeared unusual steam locomotives which were to move on ice.

The first steam locomotive of this kind was designed by Nathaniel Grew, an English engineer, and was only 15 ft in length. The designer believed his locomotive was an efficient and cheap means of transportation in winter conditions. This locomotive was sent to Moscow, and soon the Russian newspapers wrote it would be used for cross-lake freight traffic. Unlike modern locomotives this one had only two wheels. The rear of the locomotive was installed on a pair of skids, and the front had a similar but smaller skid.

There existed another strange locomotive, also designed by N. Grew. Like the first one this steam locomotive operated in Russia in the winter 1861–1862, and it was then reported the locomotive was being used on Russian rivers handling passengers and freight.

Nobody knew at that time whether such locomotives would find application in the future.

11. Переведите текст письменно со словарём (20 мин).

**Brakes**

(1) That railwaymen took great interest in the problem of stopping
trains from the very beginning of railroading is quite evident. The fact is that troubles with brakes began on the Stockton & Darlington Railway when this first railway line was only six weeks old.

(2) One day as the train was running over the rails a coupling device broke. Being freed from its load, the locomotive leaped ahead (пад. рвануться). Having applied the brake the driver quickly stopped the engine, but he could not stop the train. The matter is that only the locomotive had brakes at that time. As a result, the cars came crashing (пад. врезаться) into the locomotive. That the cars themselves must have brakes became clear to the railwaymen.

(3) Many efforts were made to develop a train brake and many types of brakes were devised. At last, George Westinghouse, an American engineer, invented a good air brake which could gradually stop the entire train. Having been improved, the Westinghouse brake found a wide application on railways.

12. Переведите текст письменно со словарём (20 мин).

Buildings in Timber

(1) From time immemorial man has applied wood for building homes, particularly at places where trees grew in abundance. Wood being easily subjected to fire, wooden buildings of great architectural interest became rare nowadays.

(2) One of the main features of wood is its property of insulation against cold. Sub-zero temperatures being common in Russia, wood was used there for houses as well as for churches. Up to now in our country there exist many remarkable architectural monuments which are entirely built of wood, the ancient Russian churches being of particular interest in this respect. The onion-shaped domes they are decorated with are worth looking at.

(3) Another remarkable example of the old timberwork which is still to be seen in London is Westminster Hall. Being erected at the end of the 14th century, the building covers an area of nearly half an acre (about 2,000 m²). That the erection of Westminster Hall involved great man power is quite obvious for at that time only manual labour was made use of in construction work.

Home Reading

TEXT 1. THE FIRST STEPS IN ELECTRIFYING LONDON’S UNDERGROUND

Steam traction originally used on London's Underground could not meet the requirements of passenger transportation due to discomfort which it offered to public because of smoke. That's why transport authorities wanted to find the way of solving this problem.

One of the plans proposed was for a tube in which trains were to be cable-operated. But the plan was never realized for at that time it was
decided to adopt electricity as the motive power. Most specialists believed a new type of traction to be introduced would provide a higher speed and would be less costly than the cable.

Thus in 1890 the first electric underground railway was opened for public traffic. Its trains were composed of three trailers hauled at a speed of 11.5 miles an hour by a 12-ton electric locomotive.

The electric locomotives on the first underground railways were smaller in size compared with locomotives of later days, but they stood to many years of hard work, hauling 40-ton trains and riding at speeds up to 25 mph. These locomotives were simple in design and strongly built, with minimum of equipment which could give trouble. In short, they represented electric motors on wheels. It was these factors that were the main reason of their long life. The brakes installed were operated by compressed air.

The device called the "dead man's handle" used later was not known at that time, so a second man, called a "loco boy", was carried on the engine to take control of the train if "the driver became ill or lost control of the train.

All the current supplied to the Underground was generated at a specially built power plant. The current was taken along the tunnel by feeder cable.

The first electric underground railway was a great success and attracted so many passengers that it was decided, to increase the fare during the peak hours; but this unusual, measure was unnecessary for after the signalling was improved a more frequent service of trains was provided.

TEXT 2. THE RAILWAYS IN THE FUTURE

Railways everywhere are engaged in a war – a grim economic war and in no field is it fiercer than in the battle for passengers. The railways are fighting today in the same way as the stage-coaches and canals did in the last century.

When the car owner wants to travel he considers only the cost of his petrol because the other sums have to be paid whether he uses his car or not. Naturally, he believes his car is much cheaper than any form of public transport, especially, if he has his family with him, and much more convenient because it will take him and his luggage from door to door.

Where distances are long, the speed of air travel is such that people choose to fly and not to undertake a long, comparatively slow travel by rail. So the railway is beset on all sides – by the car for short journey and the aircraft for long.

Fortunately for railways there is a middle distance and it is in this middle zone that the railways have the chances to win the traffic.

What is to be the role of railways in the future? Will it succeed in remaining one of the world's principal means. These locomotives were
simple in design and strongly built, with minimum of equipment which could give trouble. In short, they represented electric motors on wheels. It was these factors that were the main reason of their long life. The brakes installed were operated by compressed air.

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The first electric underground railway was a great success and attracted so many passengers that it was decided, to increase the fare during the peak hours; but this unusual, measure was unnecessary for after the signalling was improved a more frequent service of trains was provided of transport? If so, what is it to be like and what traffic is it to carry?

The railway is likely to remain as a vital means of communication for many years yet. For this, however, the railway will have to increase its speed. Recent investigations have shown that steel wheels on steel rails are capable of achieving much more in this field than it was thought before. Only a few decades ago 125 mph were considered as the upper limit of speed on conventional track, but V15CM60 mph have already proved possible in regular service if the track is carefully laid and well maintained.

The need for speed is recognized, so is the need for comfort. Ordinary comforts of seating, food, air-conditioning, etc., can be taken for granted, but there will have to be a considerable rebuilding of main lines to reach the proper standards and easing of curves on high-speed lines to protect passengers from the effects of centrifugal force.

As train speeds increase so does the power needed to operate them;-That, is why careful attention will have to be devoted to the aerodynamic shape of the front end of trains and to light but strong construction of the rolling stock.

TEXT 3. THE PROBLEM OF HIGH-SPEED FREIGHT TRAFFIC

The problem of high speeds involves a great number of other problems to be solved whether engineering or economic.

High speeds are possible but expensive. Today, signalling, brakes and track – because the wear on the rails increases rapidly with higher speeds – are all being improved at the same time as the motive power; and this costs money. To be economical, the new expensive tracks suitable for high speeds will have to be intensively used.

Fast passenger and slow freight trains, however, cannot be mixed on the same track. The alternative is to have one route for passenger trains and
another for freight. But maintaining two routes instead of one also costs too much money. Perhaps the real solution is to bring freight trains up to passenger standards. The closer the speed of freight trains approaches that of passenger trains, the better. And the faster the speed of all types of trains, the more journeys each train can make. In this way few trains can do more work and this results in the reduction of capital costs.

In this connection, it is of interest to note that when the new Tokaido Line in Japan was built it was decided that it should be used both for freight and passenger trains; Goods were to be loaded in containers and carried on specially-built multiple-unit trains designed to carry containers and including most of the features of the passenger stock.

In fact, the super-fast freight trains have never been built. But there is little doubt that this is the direction in which things are to move in the future. When high speed passenger and freight trains use the same track, the same signalling, and so on, they will be able to reach the point where the equipment will be employed to optimum efficiency.

**TEXT 4. THE EXPRESS TRAVELS AT 500 kph**

In recent years, the speeds on railways have increased so greatly that we can say that the monopoly of the wheel is coming to an end. Indeed, railway trains now travel at a speed of 200–300 kph. This is the limit for the traditional "wheel-rail" system.

Many specialists now speak in favour of pollution-free, noiseless and efficient high-speed land transport (HSLT) based on the principle of the electromagnetic attraction and repulsion.

The trains of this type or the magnetic planes, as they are sometimes called, are to be propelled by a linear induction motor. They will be able to travel at speeds up-to 500 kph and replace the existing trains on long-distance routes and airplanes on distances of up to 2 000 km.

An extensive research and development work is being carried out in this field by the Novocherkassk Research Institute in the Soviet Union. In the course of the work the scientists and engineers determine the most suitable routes for HSLT, study different magnetic suspension systems, emergency braking and a number of other problems. There are several versions of magnetic suspension. Most specialists consider that the practicable system for HSLT in the near future would be the system in which electromagnetic attraction forces would lift the vehicle 10–15 mm above the track. The linear motor would supply power for propulsion.

Four vertical and four horizontal electric magnets would ensure the suspension and the stabilization of the vehicle. A specially-designed control system would automatically provide a 15-mm gap between the vehicle and the track.

A model of a magnetically suspended vehicle currently, undergoing trials
serves as a prototype of a full-size experimental vehicle, seating 75 passengers and running at 400 kph. The speed, however, will be increased later on.

The scientists are planning to use the magnetically suspended transport for linking major Soviet cities with airports, industrial areas and rest zones.

**TEXT 5. LOCAL TRANSPORT FOR SMALL AND MEDIUM-SEIZED TOWNS**

Many large cities have already started to build Underground and rapid transit systems. But because of a high initial cost they turn out to be too expensive for smaller and medium-sized towns with less concentrated traffic volumes.

For the reason, more and more new proposals for low-capacity and low-cost transport systems have been made in recent years.

The range of the transportation systems now available or at the design stage is very wide: from tracked cabin systems through fully automatic Underground railways of various sizes to moving walkways (escalators) capable of moving at up to 18 kph.

Among the numerous projects already worked out and realized one should mention the so-called "Aramis" tracked cabin system which has been in operation at Orly, near Paris, for quite a number of years and the Val fully automatic mini-metro which is now in operation in the northern French city of Lille.

In the "Aramis" system, small electrically powered cabins with 4 to 10 seats travel on special tracks to the desired destination without stopping on the way. However, at peak periods the cabins may be made up electronically into trains.

The mini-metro is designed for regular passenger service and therefore the trains stop at every station. Full automation makes it possible to provide a one-minute service by two-car trains, each carrying 52 passengers.

**TEXT 6. 21st – CENTURY ESCALATORS**

Russian scientists and engineers in Leningrad have succeeded in designing a new type of escalator to be used both in residential and public buildings. Their operation is based on the running spiral principle. What advantages will they offer?

These escalators are particularly suitable for multi-storey buildings, the escalator girdling round the lift shaft. Thus the construction of such buildings becomes simpler and less costly.

The Russia was the first in the world to initiate the production of superlong escalators, up to 65 metres long. Commercially produced escalators have served as a basis for designing new models which will remain up-to-date even in the 21st century.
For example, travelators – moving pavements – have become a prototype of machines of the future. They have first appeared at the Leningrad Pulkovo Airport. A horizontal belt carries passengers, quickly and comfortably from the platform to the air terminal. Some time later parts of a 150m-long travelator were sent from Leningrad to Yerevan, where it was assembled on the site of a new sports and concert complex in the Armenian capital.

The Russian engineers have begun designing a new generation of travelators that move at a speed of 15 kph. They can be used in streets and on vast exhibition grounds as, for example, the VDNKh. New durable materials will allow this kind of municipal transport to operate outdoors in any weather and season.

The designers are also working to improve metro escalators. The performance characteristics of the latest modification that has recently gone into mass production are better than previously produced models. The run between scheduled repairs has been increased by nearly 20 000 km. A wiser arrangement of the units has simplified maintenance and the escalator now moves more smoothly and with less noise.

Nearing completion is the designing of a two-speed escalator. During peak hours it will run at a speed of 0,94 metres per second and slow down at off-peak periods. This will result in energy saving and longer periods between major repairs.

New machines are designed to be assembled from modules. The module principle will make it possible for the escalators already in operation to be reconstructed more efficiently and also for their carrying capacity to be increased.

TEXT 7. THE TALKING BUS STOP

ELSIE (Electronic Speech Information Equipment) is an unusual talking bus stop designed in Bristol, England. It is intended to give announcements of the impending arrival of buses at a particular location.

The system contains a synthetic speech computer that actually communicates with individual buses on the street. Designed as informational aid to mass-transit travelers, the system is to be on an initial 12 to 18-month test in England.

ELSIE provides its useful information on command from a single push-button control. As soon as the command is given, the electronic voice gives the time of day, the identifying number and route of buses that serve the stop and the scheduled time when the next one is due to come. But ELSIE also speaks up on its own, automatically informing the waiting travelers of the number and route of the next bus as it approaches the stop.

The basic technology ELSIE is based on is a sophisticated system. It operates as follows: radio receivers aboard each bus pick up signals that are
broadcast by transmitters installed in the street. These identifying signals are then transmitted to the speech modules along the buses' route. Each module has a microprocessor memory that stores timetables and also has a human-speech programme capable of putting together phrases from a vocabulary of 100 individual words and numbers.

The designers made ELSIE's voice female-sounding to give it a friendly tone, but also included a microphone listening device that senses the noise of background traffic and raises the voice intensity as required.

TEXT 8. TRANSPORT AND THE ENVIRONMENT

It is known that every type of transport has its effects on the environment. Motor cars, planes, and locomotives pollute the air, especially in big cities. It has been estimated that one car burns an average of 2 tons of fuel per year using up to 27 tons of air in the process of burning, their exhaust gases containing very dangerous carbon dioxide and other extremely harmful substances. Motor vehicles appear to use up nearly 4 times as much air as the world population.

In addition, land and air transport is a major source of noise which is harmful for human health.

The principal task today is to find ways and means to reduce air pollution and noise produced by all types of transport, city or suburb.

Some specialists believe electric transport is the kind of transport to be given much attention to. Among the electrically-driven vehicles one should mention electromobiles or battery electric cars and buses. Up-to-date, several types of battery electric cars have been developed in the USSR and in some countries abroad. They do not pollute the air and they are practically noiseless in operation, but in many respects the electric cars have lower characteristics compared with the internal combustion engines, the main problem being the short range between recharging batteries. The accumulator batteries modern electric cars are powered by are not only short-lived, they are too heavy and too expensive and generally unsuitable for electrically-driven cars.

One promising trend in the design of electric cars may well be the fuel cell as a power source. A great deal of research is being done in many countries on building a reliable and efficient fuel cell for mass-production cars.

The research and development work undertaken by Russian engineers has led to the development of an electrochemical generator called "Istok" which is likely to replace the bulky accumulators.

The "Istok" consists of six fuel cells arranged in three units. A special reactor operating on hydrogen and oxygen generates electricity. The only resultant product of hydrogen-oxygen combustion is the vapour of distilled water.

The "Istok" is a great improvement on all similar sources of energy used before. For all practical purposes, it is but a miniature electric power station.
The electromobiles fitted with the electrochemical generator help protect the capital's environment from the exhaust gases. Unlike all previous electromobiles the Istok – powered vehicles can cover up to 150 km without recharging.

TEXT 9. ROBOTIZATION – DAWN OF A NEW ERA

What is a robot? Basically, it is a machine which is designed to do the work of a human being. It is usually controlled by a computer.

Computer scientists and engineers in several countries are developing robots to replace people at dangerous locations or at simple jobs. Robots with arms and hands would be helpful at plants where there are toxic chemicals or vapours or where there is danger of radiation.

Fujitsu Fanuc Ltd, Japan, one of the world's producers of computerized industrial equipment and robots, has designed robots making robots. It goes even further. It hopes to build a factory without any workers at all.

At the same time Hitachi, the Japanese electronic company, has mobilized several hundred scientists and engineers to produce a new generation of robots. They will be able to see, feel and walk up and down factory floors to supervise other robots on automatic assembly lines. The company expects all blue-collar workers to disappear from the assembly lines. Factories will be manned only by clerical staff and a few maintenance technicians.

The first industrial robots appeared in the Russia more than a decade ago. In the late 60's, engineers believed that industrial robots were not economically or technically expedient. But after two or three years it became clear that these devices were an economic and social necessity.

Today, Russian production has entered the "era of robotization". Russian designers are making robots which could replace man in all his tiresome and dangerous jobs. Robots perform both the major and auxiliary operations, freeing man from unskilled, monotonous labour.

In connection with the growth of unemployment in the West, the advent and spread of "steel collars" (as opposed to "blue collars") has not been welcomed everywhere or by everybody. For the employers, robots are ideal workers: they do not go on strike, do not demand higher wages and better working conditions, and do not go for politics. In the meantime, unemployment in capitalist countries keeps on growing. People fear for their future, security, living standards, and jobs. As estimated by British economists, the automation of production is likely to cut the number of jobs by 15 per cent in the near future.

In the USSR, however, the introduction of robots meets the existing requirements of growing industry. This is because of both the shortage of working hands in the country and eliminating manual labour. Robotization is
sure to be an important reserve for raising labour productivity.

Our industry is beginning mass production of second generation robots – the so-called adaptive robots which have technical vision and can perform the most sophisticated jobs. It is planned to start the production of third generation robots with elements of artificial intellect.

Examination Topics

Text 1.

Cambridge

1. Cambridge is the second oldest university in Britain. 2. It lies on the river Cam and takes its name from this river. 3. Cambridge was founded in 1984 when the first college, Peter House, was built. 4. Now there are twenty-two colleges in Cambridge, but only three of them are women's colleges. 5. The first women's college was opened in 1869. 6. The ancient buildings, libraries and colleges are in the centre of the city. 7. There are many museums in the old university city. 8. Its population consists mostly of teachers and students. 9. All students have to live in the college during their course. 10. In the old times the students' life was very strict. 11. They were not allowed to play games, to sing, to hunt, to fish or even to dance. 12. They wore special dark clothes which they continue to wear in our days. 13. In the streets of Cambridge you can see young men wearing dark blue or black clothes and the "Squares" – the academic caps. 14. Many great people have studied at Cambridge, among them are Bacon, Milton, Cromwell, Newton, Wordsworth, Byron, Tennyson, Darwin. 15. Now Cambridge is known all over the world as a great centre of science.

Text 2.

The Oldest University in Russian

1. Moscow University is the oldest University in Russia. 2. It was founded more than 235 years ago by the great Russian scientist Mikhail Lomonosov. 3. The University was designed as a centre of Russian science and education. 4. It is associated with the names of many well-known scientists, writers, poets who studied and worked there. 5. Among them are such outstanding scientists as Zhukovsky, Vernadsky, Lebedev, Ushinsky, Vavilov, Keldish. 6. Such well-known writers and poets as Fonvisin, Gribojedov, Lermontov, Chekov, Turgenev also studied at the University. 7. The list of such great names is endless. 8. At first, the University had only three departments: philosophy, medicine and law. 9. The faculty of philosophy had two sections: physics-mathematics and history-philology. 10. There are 16 departments, 275 chairs, 360 laboratories, four research institutes, a computer centre, four observatories, a botanical garden and its branches and three museums there. 11. The student body number about 28 500 people from Russia and 4 500 from other countries. 12.
There are over 120 academicians and corresponding members of the Russian Academy of Sciences among 8,000 instructors. 13. The students live in dormitories with all modern conveniences and comfort. 14. The teaching standards in Moscow University are very high and internationally recognized.

Text 3.

**Japanese Education**

1. The entire society in Japan is mobilized around children. 2. Everything is aimed on education. 3. Most mothers don't work especially when their children are small. 4. Their major profession is mothering. 5. It is said that the Japanese mother is an agent of the educational system and that without her it wouldn't work. 6. Women have a curriculum for their kids. 7. They're very inventive about it, with games, and songs, exercise and dancing. 8. It's a joy to watch a Japanese mother with her child. 9. Fathers spend much of their time off on work. 10. Sunday is when he's with the kids. 11. So there's a nickname for father; he is called the Sunday friend. 12. When you come into a Japanese elementary school classroom you're shocked. 13. Kids are jumping all around and calling out answers to questions. 14. Japanese teachers are absolutely relaxed and stand off to one side, not trying to control the classroom. 15. The children are engaged in the work and are shouting out answers in friendly competition. 16. They're involved that the teacher often says that the noise level is the measure of her ability to motivate the kids. 17. The Japanese have no special curricula for gifted children, they are all equal. 18. They don't want to recognize diversity. 19. They like to say: "We are all one white silk sheet" or "The head that sticks up above the others gets lopped off". 20. Children are taught to think of themselves as members of a group. 21. The school is a society with its own ways of doing things. 22. In the first grade, before doing anything academic, the teacher spends the first part of the year getting the children socialized to the ways of the school and the habits of working together in the groups.

Text 4

**Education in Canada**

1. Most provinces of Canada have educational institutions similar to those of the United States. 2. At the same time European influence is to be found in Canadian education. 3. Some of the elementary schools provide religious instruction. 4. In secondary and higher education heavy emphasis is placed on established academic disciplines, on prolonged study of chosen subjects, and on examinations. 5. The high schools together with the elementary schools form one educational ladder. 6. Higher education is rather limited; it is too expensive for the most of Canadian young people. 7. Canada has state and private educational establishments. 8. There is no selective examination when pupils
pass from elementary to secondary schools. 9. In secondary schools the pupils have a choice between courses of academic or vocational bias (large cities have both). 10. There is a choice between academic and commercial courses in some schools. 11. In rural high schools the options usually include an agricultural course. 12. As for vocational education it is on the basis of four years of elementary education. 13. These schools don't give enough education for their pupils to go to the colleges or the universities later on. 14. About 3 million boys and girls are enrolled in public elementary and high schools. 15. There are about twelve thousand students in 112 colleges of Canada. 16. It is not easy to get knowledge in Canada as the cost of study at the colleges is very high. 17. That is why only few of young people actually reach their goal.

Text 5

From the History f Education

1. The history of education begins with the childhood of the human race. 2. The History of education is the history of man's achievements since he began to keep written records, a period of about 7 thousand years. 3. At the beginning education was quite unconscious. 4. In trying to get food, shelter and safety, a man originally learned to observe nature, to use it and keep away from danger. 5. Experience was the next means of training. 6. This was the beginning of education imported by the elders to their children. 7. Asia was the birthplace of civilized cultures. 8. Early oriental people had a definite attitude to education. 9. They were not concerned about the development of individuality and education was dictated to a person. 10. The educational aims of these cultures were to keep traditions, to observe social order and to prepare for life. 11. The method of instruction that early men used was through imitation. 12. Children began to imitate their elders first in play. 13. As children grew older, they imitated their elders taking part in the hunt, in agriculture, in domestic duties and religious ceremonies.

Text 6

My Country

Russia is the largest state in the world. It occupies half of Europe and one third of Asia. When the residents of the Far East hurry to work in the morning, the residents of Moscow hurry to the evening shows.

Russia borders on twelve countries on land: in the West it borders on Norway, Finland, Estonia, Latvia, Belorassia, the Ukraine; in the South it borders on Georgia, Azerbaijan, Kazakhstan, China, Mongolia, the Korean People's Democratic Republic. Twelve seas wash the shores of Russia.

Russia is rich in water resources. It has a number of lakes and rivers. The largest river in the European part of the country is the Volga, and the largest river
in the Asian part of the country is the Lena. Lake Baikal is the largest fresh-water lake in the world.

"Russia is one of the richest countries in the world in natural resources. The climate of Russia differs from one part to another. In the South-West the weather is usually mild and wet; northern Asia is the coldest place; but in the middle of the country the climate is moderate and continental. Russia is a producer of heavy machines, agricultural machines, aeroplanes, lorries and cars, tractors, trench-diggers, refrigerators, railway carriages, ships and boats, TV and radio sets and a lot of other things. The largest cities in Russia are Moscow, StPetersburg, Volgograd, Krasnodar, Nizhny Novgorod, Voronezh. The largest seaports are Murmansk, Vladivostok, Kaliningrad, Novorossijsk. The Black Sea is a very popular place for people who prefer to spend their holidays at the seaside.

As for me I have visited a lot of places in my country. I have seen many cities and of course I would like to see more. Last year I spent two weeks in the Far East. My relatives took me for a guided tour of Vladivostok. I enjoyed every minute of my stay there. But my dream is to do a motoring tour of Russia and see every corner of it.

Слова и выражения

to border on – граничить;
cattle – крупный рогатый скот;
farming – занятие сельским хозяйством;
export – экспорт;
to export – экспортировать.

Text 7

Moscow

The history of Moscow began in 1147, and since then Moscow has always had a leading position in the life of the whole country. It is the political, cultural, scientific centre of Russia.

Coming to Moscow for the first time, many tourists start sightseeing with Red Square. In Red Square they visit St. Basil's Cathedral, a masterpiece of ancient Russian architecture. It was built in memory of the victory over Kazan in 1552. The monument standing in front of St. Basil's Cathedral tells us of the people's victory over Polish invaders in 1612. On the monument you can read the following words: "To citizen Minin and Prince Pozharsky from grateful Russia".

On the territory of the Kremlin we can see the Bell Tower of Ivan the Great built in the 15th century. At its foot there is another ancient monument – the Tsar Bell weighing 200 tons.

Opposite the Cathedral is the Museum of History.

If you are interested in arts you'd better visit the Tretyakov Art Gallery which
contains fantastic Russian icons, monumental paintings on historical themes, canvases by Peredvizhnik, Repin, Surikov, Levitan and other great artists. If you visit the Pushkin Museum of Fine Arts you'll admire the magnificent display of West-European paintings of the 13th–20th centuries.

Moscow has over 60 historical, art, natural science, literary and theatrical museums, memorial houses and flats, exhibition halls.

Moscow is a city of world-famous theatres. The Bolshoi Theatre was opened in 1825. Its repertoire includes more than 50 operas and ballets. The Maly Drama theatre, the Moscow Art Theatre, the Obraztsov Central Puppet Theatre enjoy great popularity.

Moscow has excellent sports facilities. The Lenin stadium and the Moscow Sports Complex "Olympijski" are the largest sports complexes in my country.

Moscow is a city of science. It has hundreds of scientific institutions and higher education establishments, among which is Moscow State University.

Слова и выражения

the Palace of Arms – Оружейная палата;
St. Basil's Cathedral – собор Василия Блаженного;
a treasure-house – сокровищница;
to contain – содержать;
dome – купол;
arhitectural ensemble – архитектурный ансамбль;
panorama – панорама.

Text 8

Great Britain

The United Kingdom of Great Britain and Northern Ireland is situated on the British Isles. It consists of England, Scotland, Wales and Northern Ireland. Great Britain is surrounded by seas and is separated from the continent by the North Sea, the English Channel and the Strait of Dover.

The rivers in Great Britain are not long, but many of them are deep. The Severn is the longest river, while the Thames is the busiest and the most important river in England.

The climate of Great Britain is mild. The Atlantic Ocean and the warm waters of Gulf Stream influence the weather of the British Isles. It is often foggy and rainy. The summers are not very hot and the winters are not very cold. Winter temperature seldom falls below zero. The average January temperature is about 5 degrees above zero. February is the coldest month in Great Britain. But, of course, the climate is different in different parts of the country. In Scotland the climate is colder man in England.
There are many mountains in the north of England and in Scotland, but they are not very high. The highest mountain in Great Britain is Ben Nevis. The north of Scotland is called the Highlands, while the south is known as the Lowlands. There are many lakes in Scotland. The most beautiful lake is Loch Lomond.

Great Britain has "park-like" appearance. The art of gardening has a very old tradition. The parks are pieces of country left in the middle of town. Everything is quiet and green. The people who come here admire the combination of sea and high land, the valleys and orchards of Kent, the lakes of Scotland, its fields, woods and parks.

Great Britain is a constitutional monarchy. The power of the Queen is limited by Parliament which consists of two houses – the House of Lords and the House of Commons.

Great Britain is a highly-developed industrial country. Nowadays the industrial centres of the country produce clothing, food, chemicals, machinery, coal, iron, ships and many other things.

Слова и выражения
the English – англичане;
the Irish – ирландцы;
the Scots – шотландцы;
The Welsh – валлийцы (жители Уэльса);
the Conservative (or Tory) Party – консервативная партия (тори);
the Labour Party – лейбористская партия;
Bank Holidays – государственные праздники.

Text 9

London

London is the capital of Great Britain. Today it is one of the largest cities in the world. Its population is more than eight million. London is situated on both sides of the Thames. There are fourteen bridges across the Thames.

In fact, there are several London’s. There is the City of London. The City is small in area but it is the commercial heart of London. The Stock Exchange, the Royal Exchange and the Bank of England are all there.

London has many faces. The West End is the finest part of London. In the West End there are theatres, cinemas, museums, picture galleries, long streets of fine shops and big houses. The Houses of Parliament, Whitehall, Downing Street are all in the West End. In the West End numerous tourists visit Trafalgar Square laid out about a hundred years ago. Nelson Column in Trafalgar Square was built in honour of Admiral Nelson. The figure of Nelson is on the top of the Column. Round the base one can see four carvings which represent scenes in the life of Nelson. Not far from it there is the National Gallery and joined to it is the
National Portrait Gallery. These galleries contain marvelous collections of paintings by English artists.

If the City is the "money" of London and the West End is the "goods" of London, then the East End is the "hands" of London.

The East End is a district of docks and factories. Westminster is the centre of administration. Westminster Abbey is opposite the Houses of Parliament. Many great Englishmen were buried in Westminster Abbey.

Here is some useful information about other cities of Great Britain. Cambridge is one of the loveliest towns of England. Its University is an old centre of education and learning. Newton, Byron, Darwin and many other celebrated Englishmen were educated at Cambridge.

Oxford is one of the oldest University towns in Europe. It is also famous for its beautiful architecture. Oxford University was founded in the 12th century. Stratford-upon-Avon is known for the fact that William Shakespeare was born and also died there. In the town the Shakespeare Memorial Theatre stands on the bank of the Avon. Shakespeare's plays are performed here for eight months each year.

Слова и выражения

the Tower of London – Тауэр;
Waterloo Bridge – мост Ватерлоо;
St. Paul's Cathedral – собор Св. Павла;
the Buckingham Palace – Букингемский дворец;
Piccadilly Circus – площадь Пикадилли;
Hyde Park – Гайд-Парк;
the Thames bridges – мосты через Темзу.

Text 10

London Transport

The most popular means of city transport in London is a double-decker, a bus that has two platforms for passengers. Bright-red buses look very nice in the streets of London. There are also green single-deckers, they run from London to the country.

In Britain the traffic keeps to the left, and not to the right as in other countries. That is why when English people want to cross the street, they must look first to the right and then to the left.

The traffic lights are also different there. The red light means "Stop", the green means "Wait", and only when you see the yellow light, which means "Cross", you may cross the street.

"Keep left" is the general rule in Great Britain and people keep left. People cross the street at the black-and-white zebra crossing, but sometimes they just run
across the street.

In London you may see people with unusual occupations, for example, buskers. What is a busker? It is a man who sings or plays in the streets, near cinemas and theatres or at bus stops, and people throw money in his hat. Buskers are usually young people between seventeen and thirty years old. Some of them play classical music and some play pop music. One o'clock is lunch time in London. The streets are full of people going to have their lunch. Many of them go into a pub to have lunch.

Londoners do not have to go very far to find green parks, because London is very rich in parks and gardens. Londoners are very proud of their parks. One of the most popular parks is Hyde Park. Londoners love it. On Sundays you may see many Londoners there sitting with their families on the grass. Hyde Park is the place for all kinds of parades and meetings.

Слова и выражения

double-decker – даблдекер, двухэтажный автобус;
platform – платформа;
single-decker – одноэтажный автобус;
traffic – уличное движение;
traffic lights – светофор;
to keep left – держаться левой стороны;
zebra – пешеходная «зебра»;
lunch time – время ланча.

Text 11

Ecological Problems

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

Large cities with thousands of smoky industrial enterprises appear all over the world today. The by-products of their activity pollute the air we breathe, the water we drink, the land we grow grain and vegetables on.

Every year world industry pollutes the atmosphere with about 1 000 million tons of dust and other harmful substances. Many cities suffer from smog. Vast forests are cut and burn in fire. Their disappearance upsets the oxygen balance. As a result some rare species of animals, birds, fish and plants disappear forever, a number of rivers and lakes dry up.

The pollution of air and the world's ocean, destruction of the ozone layer is the result of man's careless interaction with nature, a sign of the ecological crisis.

The most horrible ecological disaster befell Belarus and its people after the Chernobyl tragedy in April 1986. About 18 percent of the territory of Belarus were
polluted with radioactive substances. A great damage has been done to the republic's agriculture, forests and people's health. The consequences of this explosion at the atomic power-station are tragic for the Belorassian nation.

Environmental protection is of a universal concern. That is why serious measures to create a system of ecological security should be taken.

Some progress has been already made in this direction. As many as 159 countries – members of the UNO – have set up environmental protection agencies. Numerous conferences have been held by these agencies to discuss problems facing ecologically poor regions including the Aral Sea, the South Urals, Kuzbass, Donbass, Semipalatinsk and Chernobyl. An international environmental research centre has been set up on Lake Baikal. The international organization Greenpeace is also doing much to preserve the environment.

But these are only the initial steps and they must be carried onward to protect nature, to save life on the planet not only for the sake of the present but also for the future generations.

Слова и выражения

ancient – древний;
harmony – гармония;
environment – окружающая среда;
riches – богатства;
unlimited – неограниченный;
to interfere – вмешиваться;
to increase – увеличиваться, возрастать;
smoky – дымный;
enterprises – предприятия;
by-product – побочный продукт;
activity – деятельность;
to pollute – загрязнять;
substances – вещества;
to upset – вредить;
oxygen – кислород;
are – редкий;
destruction – разрушение;
ozone – озон;
layer – слой;
interaction – взаимодействие;
horrible – ужасный;
disaster – катастрофа;
to befall – пасть (на что-то);
damage – урон, ущерб;
consequences – последствия;
explosion – взрыв;
Outstanding Scientists of the World

The world knows the names of many great scientists: mathematicians, physicists, chemists, biologists, linguists, historians, etc. A lot of discoveries have been made by them in different fields of science and engineering. But the greatest event of the 20th century was the flight of Man into space.

Special merit here belongs to Russian scientists. Konstantin Eduardovich Tsiolkovsky is one of them. K. Tsiolkovsky was born in 1879 in a small Russian village near Ryazan. Through all his life he had been working on the problem of interplanetary travel. He worked out the theory of cosmic flights. K. Tsiolkovsky believed that "mankind will not remain on Earth forever", and he dreamt to see that. But he died in 1935.

The man who was standing behind Russian space strategy from the 1930s was Sergei Pavlovich Korolev. An outstanding scientist, he devoted all his life to rocket research, constructing artificial satellites.

The first artificial sputnik was launched on October 4, 1957. The Russians have every right to be proud of it.

Some years later the most remarkable event in the history of cosmonautics took place. On April 12 1961 the spaceship "Vostok", piloted by Yuri Gagarin, went up. It is due to Korolev's genius and some other top engineers' talent that Russia became the world leader in conquering space.

Yuri Gagarin was the first man who made his historic flight into space. The whole world applauded this handsome young man. He orbited the earth once, staying in space for only 108 minutes, but he was the first to fly to stars. Mankind will always remember him. In commemoration of Gagarin's flight April 12th has been made the International Day of Cosmonautics.

With Gagarin's flight to cosmos Tsiolkovsky's "Utopian" dreams came true. A new age of space exploration began.

Слова и выражения

discovery – открытие;
discovery – открытие;
engineering – техника;
engineering – техника;
space – пространство, космос;
space – пространство, космос;
merit – заслуга, достоинство;
merit – заслуга, достоинство;
interplanetary – межпланетный;
mankind – человечество;
forever – навсегда;
strategy – стратегия;
research – исследований;
artificial – искусственный;
satellite – спутник;
to launch – запускать;
remarkable – заметный;
cosmonautics – космонавтика;
to pilot – вести, управлять;
due to – благодаря;
to conquer – завоевывать;
to orbit – летать по орбите;
commemoration – ознаменование;
utopian – утопический;
exploration – исследование, освоение.

CONFERENCE

Preparatory Work

1. A good report, requires a lot of preparatory work. Some specialists distinguish the procedures enumerated below.

Read all of them and:

   a) determine four of them which you find to be the most important;

   b) arrange all of them in the proper order;

   c) divide all of them into three groups:

      Planning stage;
      Script stage;
      Rehearsal stage.

1) Recording the presentation on audio tape.
2) Recording the presentation on videotape to control body language.
3) Planning the presentation (aim, time, place, length, form).
4) Writing the presentation out in full.
5) Producing a plan.
6) Writing down all your ideas.
7) Choosing the best demonstration materials (documents, pictures, photos, slides, diagrams, tables, graphs, charts, objects, models, etc.) and handouts.
8) Producing demonstration materials and handouts.
9) Reading the script.
10) Producing cards with the notes of the presentation.
11) Using a marker to underline the most important ideas and facts.
12) Transferring the most important things into cards.
13) Timing the presentation to fit the available time.
14) Rehearsing the whole presentation from the cards.
15) Reducing the script if necessary.
16) Arranging the cards.

2. The planning stage is really important. At this stage you should provide answers to the seven basic questions why? to whom? what? where? when? how long? how? Say what is meant by these questions matching the questions on the left with the information you need to answer them on the right.
   why? a) What the audience knows about the subject, their status, age, culture, specific interests – the information you present should tailor their needs;
   to whom? b) the aims of your report, those evident and hidden;
   what? c) the subject matter of the report;
   where? d) the place where the report will be delivered (a large conference);
   when? e) the time (the first report, the last one, after or before the break, in the evening, etc.);
   how long? f) the length of the report is determined by many factors, but generally try to make your talk reasonably short;
   how? g) the format, or form of the report including the use of demonstration materials and handouts.

3. The next stage is the so-called script stage when you are writing the text of your report. To some extent it is possible to speak about the typical structure of any report and because of that of the typical language used. As far as the structure is concerned, usually we can find three main parts in reports; introduction, main body, conclusion. As for the main body of the report, specialists as a rule do not have any difficulty in presenting the problem they are working at. But it is not so easy to frame it following some universal rules and language. Now you will get acquainted with the main rules which will help you to be a success, a) First of all we shall deal with the main sections of the introduction given below and their functions.

<table>
<thead>
<tr>
<th><strong>Introduction</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Signals of the start</td>
</tr>
<tr>
<td>Cireetmgs to the audience</td>
</tr>
<tr>
<td>To gain the attention of the audience or the people near you in the presidium</td>
</tr>
<tr>
<td>To greet he audience</td>
</tr>
</tbody>
</table>

65
<table>
<thead>
<tr>
<th><strong>Sell-identification</strong></th>
<th><strong>To introduce yourself or to thank the person who introduced you</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a positive</td>
<td><strong>To attract attention, to give a smile, to tell a joke, to ask for something, to do something</strong></td>
</tr>
<tr>
<td><strong>Stating the target</strong></td>
<td><strong>To derive clearly the purpose of your report</strong></td>
</tr>
<tr>
<td>Providing an overview</td>
<td><strong>To outline the main points of the report</strong></td>
</tr>
<tr>
<td>Stating the rules</td>
<td><strong>To inform the audience of the length of the report, what action, if any, is to be taken, the time and the form of questions</strong></td>
</tr>
</tbody>
</table>

**Stating the target**

It is necessary to define the purpose of your report at the beginning to help the audience to follow you. Speaking about the target we can use the words: target, goal, objective, purpose, main aim.

My goal today/now/this morning is to analyze/to present... The goal of my (this) report/my (this) presentation is to inform/to discuss/to review/to consider/to identify/to report... Besides, I am going to ...

I would like to ...
I'm here to ...

You are a participant of an international scientific conference and represent your institute. Greet the audience, introduce yourself and state the target of your report as a beginning of your presentation. Do not forget to give its title.

**Providing overview**

It is good if it is possible to structure your report. You can use the following language to inform your listeners about it:

I've divided my report into three parts/sections as follows: ... I'll be developing the following problems in my report... My report will be in three parts: ...

**Stating the rules**

At the beginning of your report it is good to inform your listeners of the time the report will take, whether handouts will be provided and me slides demonstrated, when questions can be asked.

The report will take about 10 minutes.
I am going to speak for about a quarter of an hour. (half an hour)
If you have any questions I will be glad to answer them at the end of
my report. If you don't understand please stop me.

Return to the scheme "Introduction" and illustrate all the stages of it with the phrases and structures you have learned.

Conclusion

<table>
<thead>
<tr>
<th>Summary</th>
<th>You repeat briefly the main points of the report or give a summary of the main proposal or conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing</td>
<td>You thank people for their attention and invite them to ask questions</td>
</tr>
</tbody>
</table>

1) Here you can find some useful expressions.
2) Finish your report or presentation by addressing the audience.

Role Play

More and more people are concerned about environmental problems. There appear a lot of articles in newspapers. There are special movements for environmental protection, "Green Peace" is among them. A lot is being done at the government level. But all the decisions taken should be based on scientific research. That is why conferences on ecological problems are very important not only for the specialists but to the public as well. The International Conference "The Environmental Problems Today" will be held in Dreamland.

Participation

You can use your own name if you like. Prepare your business card (first name, last name, profession, address, telephone number, the institution you represent).

Choose one of the topics from the list you are especially interested in. (If necessary you can add your own).

Topics

1. Air pollution.
2. Water pollution.
3. Noise pollution.
4. Pollution in cities.
5. Pollution by industries.

Read the invitation you have received and fill in the registration form.

The Environmental Problems Today
25-27 May 1999 Hotel Hilton,  
20 Bush Avenue,  
Star City, Dreamland

The conference is designed to give you the information you need on the important issues of environmental protection in your industry. The conference will provide you with solutions to your questions, you will also get a chance to address the audience on challenging issues of ecology.

Please send your registration card and summary of your report.

Prepare the text of your report, visual aids, handouts and the necessary equipment using the materials given or which you can find yourself.

On your arrival at the conference find the programme and make your report. Listen to other speakers, put at least three questions to some of them.

Chairman

According to the official programme of the conference you are to open it pointing out the importance of the event, its main goals, the number of the participants. You are to introduce all the speakers, to conduct all the competition and to close it.

This is the way you may open the competition.

LADIES AND GENTLEMEN! DEAR FRIENDS!

WE HAVE GATHERED HERE TO ..

WE ARE VERY PLEASED WITH THE FACT THAT ... PEOPLE OF DIFFERENT PROFESSIONS FROM ... COUNTRIES TAKE PART IN OUR CONFERENCE. LET ME INTRODUCE ... FROM ... HE/SHE IS ... BY PROFESSION ...

Ecological Problems

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consequences – последствия;
to interfere – вмешиваться ;
explosion – взрыв;
to increase – увеличиваться, возрастать; protection – защита;
smoky – дымный ;
concern – озабоченность;
enterprises – предприятия;
security – безопасность;
by-product – побочный продукт;
agency – агентство;
activity – деятельность;
One of the biggest problems that the world faces today is environmental. The hole in the ozone layer is growing, and if people don't stop polluting the atmosphere the effects will be irreversible.

I agree that the environment is a serious issue, but what worries me are the wars. There are always countries at war, but at least most of them haven't got any nuclear weapons.

There should be a world ban on anything that causes pollution. Packaging for all products should be biodegradable, and factories should be made to decrease their pollution output, and rainforests should be replanted.

As for nuclear weapons, I think that they should all be confiscated and destroyed. -8«А: The problem with nuclear weapons is that once you've invented something you can "uninvent" it! It exists now and so the problem has to be dealt with.

All people should be taught from an early age what is right and wrong. If there wasn't so much violence on television, then maybe people wouldn't be so violent towards each other.

I think more attention should be given to organisations such as the U.N. which try to maintain peace in the world.

I think it is ultimately up to individuals to look after the world. Every person can do a lot to protect the world we live in. SB: I don't agree. I think individuals are powerless and the governments hold all the power. Therefore I think it is the governments' responsibility to try and make the world a cleaner, safer and better place to live.

One picture shows a rainforest on fire. Although I think this is a serious environmental problem, I don't think the destruction of the rainforests will cause the end of the world.

I agree, and I think that nuclear power stations do pose a real threat to the world. Yes. Look what happened at Chernobyl. If nuclear power is used
carelessly then some serious problems could arise.

- The picture of a man trapped inside a computer shows how man is becoming a slave to computers. I do think that computers could be a problem in the future because we rely on them so heavily, but I don't think they could cause global destruction.

- But don't forget that many countries' defence mechanisms are linked up to a computer system. One problem with the computer could lead to the launching of a nuclear bomb which would cause an explosion, as in the picture.

**Environmental protection**

- *Is the problem of environmental protection urgent today?*

  Yes, the problem of protecting the nature is of primary importance today. Through their daily activities people pollute and contaminate land, water and air. If it continues the damage may become irreversible. It is known far and wide that pollution has accompanied mankind ever since groups of people first assembled and remained for a long time in one place. But pollution was not a serious problem as long as there was enough space available for each individual or group. With the establishment of permanent human settlements pollution became a problem and has remained one ever since. With the rise of advanced technology, the rapid spread of industrialization and the increase of human populations pollution has become a universal problem. The price for rapid industrial development is very high: natural resources are exhausted, the ecological balance of the planet is disturbed.

- *How is the environmental protection problem solved today?*

  In recent years the pollution problems have received great publicity. The environmental movement associated with no political party has gained wide spread trust and support. Environmental activists stress that the problem is caused by industrial pollution and the automobile. The media's begun to campaign against the ugliness of billboards, tin cans and trash. The protection of natural resources and wildlife is becoming a political programme in every country. Numerous anti-pollution acts passed in different countries led to considerable improvements in environment. In many countries purifying systems for treatment of industrial waters have been installed, measures have been taken to protect rivers and seas from oil waters.

- *What are the main problems of today?*

  Cleaning up air pollution is one of the main problems of today. Urban air pollution continues to expand as a result of the increased number of motor vehicles. Exhaust fumes from the engines of automobiles contain a number of polluting substances. Tokyo has such a serious air-pollution problem that oxygen is supplied to policemen who direct traffic at busy intersections. Milan, Ankara, Mexico City, and Buenos Aires face similar problems.

- *Is acid rain damaging to nature?*
One of the climatic effects of air pollution is acid rain. It is damaging to water, forest, and soil resources. It is blamed for the disappearance of fish from many lakes, for the widespread death of forests in European mountains, and for damaging tree growth in the United States and Canada. Acid rain has been reported in areas as far apart as Sweden and Canada, and in parts of the United States from New England to Texas.

- Does radioactive contain location of environment worry people?

People also concern the dangers resulting from massive releases of radioactive materials from nuclear weapons, which, if used on a major scale, could seriously endanger all of humanity. Another concern is accidents at nuclear power plants. In 1978 a nuclear power plant in Pennsylvania suffered a severe accident leading to partial meltdown of its radioactive core. In 1986 the Chernobyl nuclear power plant near Kiev suffered a fire and partial meltdown, resulting in a major release of radioactive particles. Much of northern and eastern Europe experienced heavy nuclear fallout. The runoff from broken-down tanks is the source of organic pollutants. Industries located along waterways downstream contribute a number of chemical pollutants, some of which are toxic. One form of pollution that is characteristic of industrial societies is noise.

- What can people do to stop pollution?

Attempts to control pollution, initiated during the 1950s, resulted in the successful elimination of such sources of pollution as industrial effluents and the outdoor burning of trash and debris. The task of cleaning up air pollution, though difficult, is not believed to be impossible. Use of fuels that are low in pollutants; more complete burning of fossil fuels; the scrubbing of industrial smokestacks often in combination with a recycling of the pollutants; and the shift to less polluting forms of power generation, such as solar energy in place of fossil fuels – all are methods that can be used for controlling pollution. Many large cities have taken measures to decrease the level of urban noise; the problem has received much attention with the advent of supersonic jet aeroplanes. In 1971 the U.S. Congress voted down appropriations to support the development of supersonic transport (SST) planes. Atmospheric testing of nuclear bombs was stopped in different countries to prevent radioactive contamination of the atmosphere. In 1990 the British government committed itself to a 30 per cent reduction in carbon dioxide emission by the year 2005.

- What can common people do to protect nature?

To protect nature people should change their attitude to it. Man should stop taking from it everything he needs and give it his love instead. Other wise the payoff will be too high. It is good that at last people started to realise that they should keep air and water clean by establishing strict pollution control. Efforts are being made to reduce pollution from automobile engines by developing pollution-free engines which may eventually eliminate the more serious air pollution problems. Moreover, the strong public reaction can
facilitate the exercise of absolute pollution control in various contamination industries.

READING PRACTICE

TEXT

NEW ENERGY FROM OLD SOURCES

1. The resources of fossil (ископаемое) fuel which made the industrial revolution possible and have added to the comfort and convenience of modern life were formed over a period of 600-million years. We will consume them in a few hundred years at current rates. Certain steps should be taken to find solutions of energy problems.

2. The current energy problem is the result of many complex and interrelated factors, including world-wide demand for energy; inadequate efforts during the recent past to develop new energy resources; delays in the construction of nuclear power plants (ядерные электростанции), automobile changes that increase gasoline consumption. Demand must, of necessity, be moderated, and intensive efforts must be made to expand the overall energy supply.

3. But energy is available to use in practically unlimited quantities from other sources. Large amounts of energy can be received from ocean tides (приливы) and currents, from huge underground steam deposits, from the power of wind and from the heat of the Sun. The idea of heating houses with the warmth of the Sun has become popular in the last few years. Since the U.S. News and World Report first told about solar heated homes near Washington some years ago, many similar projects have appeared around the country. In many places schools are using solar units to provide classroom heat.

4. Most solar-heating systems coming on the market use a black surface to absorb the Sun's heat. Engineers cover the surface with glass which lets in the rays, but holds heat. The heat is transferred to water that runs through small pipes. The hot water is then circulated through the house. It is estimated that 40 million new buildings will be heated by solar energy by the year 2000. The solar cell (батарея) is another way to produce power from the Sun. It converts sunlight directly into electricity. These cells are used with great success in the space program, but remain far too expensive for widespread application. In the meantime, solar homes are being built and lived in from California to Connecticut. The next step is mass production of homes, office buildings and schools – all heated by the Sun.

5. Putting the wind to work researchers are showing great interest in the age-old windmill (мельница). Several big companies are now studying windmills. These companies are to analyse windmills ranging from 100 to 2,000 kilowatts. The smallest would provide sufficient electricity to power several homes, the largest could provide electricity to a small village.
**Composition of the Annotation**

Аннотация специальной статьи или книги – это краткая характеристика оригинала, излагающая его содержание в виде перечня основных вопросов и иногда дающая критическую оценку.

Объем аннотации обычно не превышает 500 печатных знаков.

При составлении аннотации на статью или книгу на иностранном языке нужно проделать следующие операции:

а) выписать название статьи (книги), фамилию и инициалы автора на иностранном языке;

б) дать перевод названия статьи или книги;

в) дать выходные данные журнала на иностранном языке: номер, год издания, место издания, том, серию выпуска, количество страниц аннотируемой статьи (от – до), количество рисунков, таблиц, библиографических названий и т.д.;

г) дать очень краткое изложение содержания статьи.

**The model of the Annotation**

Аннотация (New Energy from Old Source)

(Новые ресурсы энергии из старых источников).


В этой статье рассматриваются вопросы получения энергии от таких источников, как солнце и ветер.

**Composition of the Report**

Реферат – это конспективное изложение содержания статьи или книги, передающее основной смысл. Реферат содержит в обобщенном виде все основные положения оригинала.

Объем реферата определяется степенью важности реферируемого материала, хотя практически средний объем реферата не превышает 2 000 печатных знаков. Рефераты должны составляться по определенной схеме:

1. Автор, название работы (на иностранном языке), перевод названия.
2. Выходные данные (см. схему составления аннотаций).
3. Краткое содержание работы.
4. Выводы или резюме составителя реферата.

**The model of the Report**

New Energy from Old Sources

(Новые ресурсы энергии из старых источников)
Статья посвящена важной проблеме поиска путей получения энергии. Вследствие того, что залежи полезных ископаемых, являющихся в настоящее время основным источником энергии, истощаются, необходимо разрабатывать способы получения энергии из других источников. В качестве таковых автор предлагает использовать тепловую энергию солнца, ветра, приливные течения и подземные запасы пара.

В статье приводятся данные о возможности отопления жилых домов за счёт солнечного тепла и снабжения электроэнергией небольших поселков от ветряных мельниц.

Упомянутые в статье источники смогут дать в будущем неограниченные возможности получения энергии.

**The Work with the Dictionary**

Словарь, как правило, состоит из заглавных слов и словарных статей.

Заглавное слово – это выделенное жирным шрифтом слово, значение которого объяснено и часто иллюстрировано примерами.

Все заглавные слова расположены в алфавитном порядке и имеют указание, какой частью речи они являются.

Словарная статья – это «мини-текст», содержащий определенные сведения о заглавном слове.

Объем словарной статьи зависит от того, сколько значений имеет заглавное слово.

В словаре может быть слово, значение которого передается одним русским словом algebra [аlгебра].

В словарной статье приводятся все основные значения заглавного слова, а также отражается возможность использования его в функции разных частей речи. Ср.: house n дом и to house v вмещать.

Большинство слов как в русском, так и в английском языке многозначно, т.е. имеют несколько значений. Ср. case – случай, судебное дело, ящик, футляр, пациент и т.д., или в русском языке ручка – маленькая рука, принадлежность для письма, устройство для открывания и т.д. Чтобы раскрыть каждое из значений многоээного слова, оно обычно иллюстрируется примерами – предложениями, которые показывают, что выбор конкретного значения многоээного слова зависит от контекста, в котором они встречаются.

**Written Translation and Typical Mistakes When You Read or Translate the Text**

Каковы типичные ошибки при чтении и переводе текста?

В ходе чтения текста студенты затрудняются:
- с делением предложения на смысловые группы;
- не соблюдают ритм и мелодию, характерные для английского языка.

Кроме этого, в ответах часто отсутствует выразительность
чтения, что свидетельствует о неглубоком и недостаточно свободном
понимании содержания читаемого текста.

Допускаются и такие ошибки, как:
- оглушение конечных согласных;
- несоблюдение долготы и краткости гласных;
- подмена звуков, искажающая смысл слова;
- палатализация (смягчение согласного перед гласными).

Перевод текста нередко свидетельствует о непонимании абитуриентами
смысла предложения из-за неумения ориентироваться в структуре английского
слова, знание которой помогает установить отнесенность слова к той или
иной части речи и, соответственно, понять связь этого слова с другими
членами предложения.

Искажение смысла текста происходит также вследствие несоблюдения
правил согласования времен английского глагола, неумения отличать
пассивный залог от активного.

Далеко не все студенты оформляют перевод в соответствии с нормами
русского языка.

Пример перевода текста с английского на русский язык.

**TEXT**

Alexander Bell was born on March, 3 1847 in Edinburgh. His genius was
inherited from his father, who was a famous teacher of elocution, and
expert on phonetics. Even as a boy his mind was inventive but in 1870 Bell's health began to
tail and there were fears of consumption. So with his father he left his native
country and went to Canada. Two years later he was in Boston, where he set up a
school for training teachers of the deaf and he also gave instructions in the
mechanics of speech. Here he started experimenting on a machine which he
believed would make the deaf "hear". He had been doing this for some time
when he accidentally came across the clue for the correct principles of
 telephony.

Прочитав текст первый раз без словаря, мы составили общее пред-
ставление о содержании текста.

Мы уяснили, что речь идет о некоем Александре Белле, родившемся 3
марта 1847 года в Эдинбурге в семье учителя (допустим, что наш словарный
запас и общий кругозор, который мы активизировали к моменту экзамена, не
dает нам пока возможности понять конкретную специальность отца Белла,
равно как и то, чем стал впоследствии знаменит Белл-младший). Мы также
поняли, что в 1870 году здоровье Белла пошатнулось и он уехал с отцом в
Канаду, появился двумя годами позже в Бостоне, где организовал школу для
подготовки учителей и «давал» почему-то инструкции по «механике речи». Там же в Бостоне он экспериментировал с какой-то машиной, а потом в его жизни появилось нечто, связанное с принципами телефонии.

Дочитав текст до конца, мы поняли, что этот некий Белл имеет отношение к принципам телефонии, и, покопавшись в памяти, активизировав ее глубинные пласты, вспомнили, что он был одним из изобретателей телефона. Теперь можно уточнить общий смысл текста, зная, что все, чем занимается Белл, имеет отношение к телефону, к звучащей речи и к техническим устройствам (он же изобретатель!), способствующим передаче звучащего слова.

Параллельно активизируется наш внутренний словарь: рассматривая английские слова, проговаривая их про себя, мы находим не все, чем занимается Белл, имеет отношение к телефону, к звучащей речи и к техническим устройствам (он же изобретатель!), способствующим передаче звучащего слова.

Становится ясно, что между Беллом и его отцом не только, скажем, биологическая, но и профессиональная связь – тот тоже имел отношение к будущим занятиям сына, и мы, пока еще неясно, но осознаем, что слова His genius was inherited from his father говорят об этой преемственности. А если присмотреться к слову genius (проговорите это по-русски: «гений» – не гений ли, не талант ли?), то можно понять, что именно было отцом передано сыну. А поскольку «гений, талант» – подлежащее, то должно быть и сказуемое, и этим сказуемым по всем признакам станет словосочетание was inherited, которое, используя наши знания о структуре временных форм, мы определим как сказуемое в форме Past Indefinite Passive; то есть не «отец передает талант» (активная конструкция), а «талант был унаследован от отца», что выводит нас на буквальное значение слова inherited (исходная форма – inherit).

Мы понимаем слова expert of phonetics; первое из них давно вошло в русский язык и утвердились в нем, более узкоспециальное второе слово мы идентифицируем теперь: «фонетика».

Более прозрачным теперь стало и туманное словосочетание mechanics of speech – Белл «давал инструкции» по «механике речи», то есть по риторике, практической фонетике, умению говорить красиво, звучно и грамотно (самым начитанным из нас сразу вспомнится профессор Хиггинс из комедии Бернарда Шоу «Пигмалион» – он тоже учил «механике речи»).

Мы даем только приблизительные варианты предварительной работы с текстом в первом и втором чтении, где принципиально важна методика ассоциаций, соотносящая читаемый и не до конца понятный текст с контекстом – с окружением, в которое вписаны незнакомые вам слова, с более широким контекстом (ваш общий кругозор), и т.д. Следующий этап – работа со словарем – будет значительно облегчен тем, что понятен не только
общий смысл текста (а потому в словаре будем обращать внимание на те значения, которые будут вписываться именно в этот смысл), но и потому, что ряд ранее незнакомых нам слов мы поняли, опираясь на контекст.


Зная, что английские слова могут одновременно выступать в нескольких морфологических функциях, то есть быть и глаголами, и прилагательными, и существительными без изменения своей формы, мы, увидев перед словом *deaf* определенный артикль, а за самим этим словом не увидев даже намека на существительное, поймем, что оно само является существительным (значение – «глухой, большой глухотой человек»).

Параллельно отмечаем и те «несостыковки», которые существуют между языками: фраза *Even as a boy his mind was inventive*, где с точки зрения русской грамматики, явно произошла путаница в субъектно-объектных отношениях, напоминает знакомую нам из русской классики фразу: «Подъезжая к станции, шляпа слетела с головы», а потому нуждается в коррекции, внесении дополнительных элементов, которых нет в оригинале.

И, наконец, приступаем к составлению русского текста, стараясь придать ему литературную форму, но одновременно и держа про запас близкие к оригиналу формулировки, – с тем, чтобы порадовать экзаменаторов как умением хорошо писать по-русски, так и способностью глубоко понимать иноязычный текст.

Перевод

(В скобках даем близкие к оригинальному тексту «заготовки».)

Александр Белл родился (был рожден) 3 марта 1847 года в Эдинбурге. Он унаследовал свой талант от отца (его гений был унаследован им от отца), который был известным преподавателем красноречия и специалистом по фонетике. Изобретательность своего ума Белл продемонстрировал, когда был еще ребенком (еще будучи мальчиком, Белл показал изобретательность ума), но в 1870 году его здоровье ухудшилось (здоровье Белла стало подводить его), и родственники стали опасаться возможности развития туберкулеза (были опасения, страхи, что есть туберкулез). Поэтому Александр Белл с отцом покинул родину и отправился в Канаду. Через два года он появился в Бостоне, где (он) основал школу, в которой готовили учителей для больных глухотой, а также давал уроки риторики (давал инструкции по практической фонетике). Здесь же он начал эксперименты по созданию прибора (начал экспериментировать над машиной), который, как он полагал, позволит больным глухотой «слышать» (заставит глухих «слышать»). Он занимался этим некоторое время, пока (когда) неожиданно (случайно) не открыл истиные
законы передачи звука на расстояние (не столкнулся с разгадкой правильных принципов телефонии).

«Чистовой» вариант перевода

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Безусловно, приведенное выше изложение принципов перевода является лишь основой для нарабатывания собственных навыков. В процессе перевода Вы должны применить не только знания английского и русского языков, но и вкус, любовь к слову, а этим вещам научить крайне трудно — они приходят со временем, с практикой.

**Railway-Terms**
1. *air cushion* — воздушная подушка;
2. *alternating current (a, c)* — переменный ток;
3. *to be responsible for, to have charge of* — отвечать за, быть ответственным за;
4. *to broadcast* — передавать по радио;
5. *to build, to construct* — строить;
6. *a check room* — камера хранения;
7. *a classification yard* — сортировочный парк;
8. *cable* — кабель, канат, трос;
9. *carriage* — вагон пассажирский;
10. *carrying capacity* — пропускная (провозная) способность, производительность;
11. *catenary* — контактная сеть;
12. *compartment* — купе;
13. *to carry the traffic* — осуществлять перевозки;
14. *to carry, to transport* — везти, перевозить;
15. *to control* — управлять, регулировать;
16. *a departure yard* — парк отправления;
17. *a destination* — место назначения;
18. *a diesel locomotive fleet* — тепловозный парк;
19. *direct current (d, c)* — постоянный ток;

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20. to deliver – доставлять;
21. to develop – развивать, разрабатывать;
22. to direct – направлять, руководить;
23. efficient – эффективный;
24. engineering structure – искусственные сооружения;
25. an engine, locomotive – двигатель, локомотив;
26. a flat car – вагон-платформа;
27. a freight yard – товарный двор;
28. fast, rapid – скорый, быстрый;
29. freight, goods, cargo – груз;
30. to facilitate – облегчать;
31. to follow – следовать, идти за;
32. gondola car – полувагон, вагон с высокими бортами;
33. hopper car – вагон-хоппер (с разгрузочными люками в борту);
34. a hump yard – горочный парк;
35. to handle the traffic – осуществлять перевозки;
36. an incoming train – прибывающий поезд;
37. a lab our, a job, a work – труд, работа;
38. lighting trains – поезда-молнии;
39. looking tickets – продажа билетов;
40. to load (unload) – грузить (разгружать);
41. a motive power – движущая сила;
42. main line, trunk line – магистраль;
43. maintenance – эксплуатация, содержание;
44. means, by means of – средство, посредством;
45. an outgoing train – отходящий поезд;
46. oil – нефть;
47. oil fuel – дизельное топливо;
48. open vehicle – неукрепированный;
49. operation cost – эксплуатационные расходы;
50. to operate – управлять, приводить в действие;
51. a power – сила, мощность, власть, энергия;
52. a power plant – электростанция;
53. performance – работа, эксплуатационные характеристики;
54. power supply – источник питания, энергоснабжение;
55. to perform – выполнять, работать;
56. to play part – играть роль;
57. to product – производить, изготавливать;
58. to put into operation – вводить в эксплуатацию;
59. a railway, a railroad – железная дорога;
60. a receiving yard – парк прибытия (поездов);
61. a rolling stock – подвижной состав;
62. radio set – радиопередача;
63. run, journey – пробег;
64. to run – бежать, двигаться, управлять;
65. to run the service – осуществлять перевозки;
66. a service – служба, обслуживание;
67. a station, a terminal – конечная станция;
68. safe, reliable – безопасный, надежный;
69. seat – место, вмещать, сидение;
70. slow – медленный;
71. speed – скорость;
72. superintendent – начальник службы пути;
73. switching locomotives – маневровые локомотивы;
74. a time table, a schedule – расписание, график;
75. a track, a permanent way – железнодорожный путь;
76. a tractive power – сила тяги;
77. a traffic – перевозки, движение;
78. a trailer – прицепной вагон;
79. a train, a coach – поезд, состав;
80. tank car – вагон цистerna;
81. thanks to – благодаря;
82. traction – тяга;
83. transit cargo – транзитный груз;
84. transmitter and receiver – передатчик и приёмник;
85. to take place – иметь место, происходить;
86. underground, subway, tube, metro – метрополитен;
87. a volume of traffic – объём, количество перевозок;
88. a waiting room – зал ожидания;
89. wagon, freight car – грузовой вагон;
90. walkie-talkie – переносная радиостанция;
91. wire – провод;
92. works – завод;
93. workshop – мастерская;
94. a yard master – начальник сортировочной станции.

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