**UNIT1**

**TRICKY WORDS**

**Exercise 1. Learn the meaning of the verb TURN  и его сочетания с послелогами:**

**Turn**

**1**. поворачивать(-ся) ; вращать(-ся) ; обёртывать; переворачивать(-ся); загибать; закручивать; направлять (тж. внимание, усилия); нацеливать (on, upon); огибать; обходить; обдумывать (вопрос, проблему); превратить; превратиться; заворачивать; кружить; обогнуть; ворочать.

**2.** (как *глагол-связка***) –**делаться, становиться;

**to turn red** -  стать красным, покраснеть;

**3. (***фраз. гл.***) turn on  -**включать;

**turn off  -**выключать;

**turn about**1) повернуться кругом; 2) повернуть кругом; 3) изменить своё мнение на противоположное;

**turn aside 1**) уклоняться, не поддерживать; 2) обойти, нейтрализовать;

**turn away**1) прогонять, не пускать;2) обойти, нейтрализовать; 3) отклонять (что-л.); 4) не сочувствовать (кому-л.), отворачиваться (от кого-л.);

**turn back -**возвращаться, поворачиваться назад;

**turn in**1) лечь спать; 2) возвращать, отдавать, сдавать;

**turn out**1) выворачивать (карманы и т. п.);  2) оказываться;

**turn up**1) подшивать (платье, брюки и т. п.); 2) прибавлять (газ, свет),усиливать (звук); 3) неожиданно появляться.

**Exercise 2. Insert the missing words in the right form.**

1*.*When  the famous singer appeared at the theatre, crowds of people --- , for lack of room.

2. They --- their way--- as they understood that it was useless trying to find him.

3. You must --- your uniform when you leave the army.

4.  He --- an excellent actor.

5. Wait a minute, please, I haven’t finished ---- your trousers yet.

6. All faces --- towards him as he rose.

7. Don’t forget --- the light when you go out.

8. When autumn comes all leaves on the trees --- yellow and red.

9. She softly --- the handle of the door.

**UNIT2. Reading and Speaking Practice Section**

**1. Guess the meaning of the international words:**

electrical motor, electrochemistry, energy, generate, transform, transmission,  photocopying machine, dynamo, cable.

**2. Match the English names of electrically operated devices with their Russian equivalents:**

washing machine                                              фен

vacuum cleaner                                                 утюг

fridge                                                                кухонный комбайн

microwave (oven)                                             посудомоечная машина

electric shaver/ razor                                        микроволновая печь

iron                                                                  пылесос

kitchen machine                                               стиральная машина

hairdryer                                                          электробритва

dishwasher                                                       холодильник

**3. Discuss in small groups the following points (see Appendix 1 on p.12):**

-  if you can  imagine our life without electricity;

-  what electrical devices you use in your every day life;

-  what can happen if one day we find ourselves without electricity.

**Text A. Electricity in Our Life**

**Read the text to find out about the industrial application of electricity and what one of the greatest advantages of electricity is. Complete the diagram.**

   It is impossible to imagine our civilization without electricity: economic and social progress will go back to the past which will completely transform our daily lives. Electrical power has become universal. Thousands of *applications* of electricity such as *lightning,* electrochemistry and electrometallurgy are *longstandin*g and unquestionable.

   With the appearance of the electrical motor power cables *replaced*transmission *shafts, gear wheels, belts* and *pulleys* in the 19th century workshops. And in the home a large range of various time and labour saving *appliances* have become a part of our everyday life.  Other *devices* are based on the specific *properties* of electricity: electrostatics in the case of photocopying machine and electromagnetism in the case of radar and television. These applications have made electricity most widely used.

   The first industrial application was in the silver workshops in Paris. The generator – a new compact*source* of electricity- was also developed there. The generator replaced the batteries and other devices that a man had used before. Electric lightning came into wide use at the end of the last century after Thomas Edison had developed the electric lamp. Then the transformer was *invented*, the first electric lines and networks were set up, dynamos and*induction* motors were designed. In the beginning of the 20th century the successful development of electricity began throughout the industrial world. The*consumption* of electricity has doubled every 10 years.

Today consumption of electricity per capita is an indicator of the state of development and economic state of a nation. Electricity has replaced other sources of energy as it has been realized that it offers improved service and reduced cost. One of the greatest *advantages* of electricity is that it is clean, easy-regulated and generates no *by-products.* Applications of electricity now cover all fields of human activity from house washing machines to the latest laser devices. Electricity is the*efficient*source of some of the most recent *technological advances* such as the laser and electron*beams*. Truly electricity provides mankind with the energy of the future.

**Practice 1. Find in the text names of all devices that  make our lives easier and say which of them are electrically operated and  which are manual.**

**Practice 2. Which device:**

- transforms electrical energy into mechanical energy?

a) iron   b) telephone    c) motor

-  lifts objects weighing hundreds of tons?

a) electric crane  b) electric furnace  c) vacuum cleaner

- lights your room?

a) blender  b) lift  c) lamp

- is based on electromagnetism?

a) TV-set  b) washing machine  c) dish washer

- helps people to pull things?

a) photocopying machine  b) electric shaver  c) electro carrier

**Practice 3. Re-read the text and choose a suitable heading for each paragraph from the list below. One heading is too many.**

1. Due to many devices our life has become easier.

2. Modern civilization needs more and more electricity.

3. Modern people can’t do without electricity.

4. Electricity is widely used in the industrial world.

5. Electricity is the main source of energy.

**Practice 4. Find the wrong statements and correct them.**

1. We use few electrical devices in our life.

2. Appearance of electrical motor contributed to the replacement of manual devices by the power cable.

3. Electrostatics and electromagnetism are the specific properties of electricity.

4. Electricity is the worst source of energy because of bad service and high cost.

5. Electricity has no great advantages.

**Practice 5. Make a short summary of the text using the headings of the paragraphs from Practice 3 as a plan.**

**Practice 6. Make up a dialogue.**

One student thinks that we can’t do without electricity, the other is sure that it’s quite possible. Give as many arguments and counter- arguments as you can think of. Use formulas of agreement and disagreement **(see Appendix 1 on p.12).**

**UNIT 3**

**Text B. Electricity Collected from the Air Could Become the Newest Alternative Energy Source**

**Consider the title of the text. Read the text to find out about the new ways of harnessing the electric energy.**

   Imagine devices that *capture*electricity from the air ― much like *solar cells* capture sunlight ― and using them to light a house or*recharge* an electric car. Imagine using similar panels on the rooftops of buildings to prevent lightning before it forms. Strange as it may sound, scientists already are in the early stages of developing such devices, according to a report*presented* at the 240th National Meeting of the American Chemical Society (ACS).

   "Our *research*could pave the way for*turning* electricity from the atmosphere into an alternative energy source for the future," said study leader Fernando Galembeck, Ph.D. His research may help explain a 200-year-old scientific riddle about how electricity is *produced* and discharged in the atmosphere. "Just as solar energy could free some households from paying electric bills, this promising new energy source could have a similar effect," he *maintained.*

   "If we know how electricity builds up and spreads in the atmosphere, we can also *prevent*death and damage caused by lightning strikes," Galembeck said, noting that lightning causes thousands of deaths and injuries worldwide and millions of dollars in property damage.

   The notion of *harnessing*the power of electricity formed naturally has tantalized scientists for centuries. They noticed that sparks of static electricity formed as steam escaped from boilers. Workers who touched the *steam* even got painful electrical shocks. Famed*inventor* Nikola Tesla, for example, was among those who dreamed of capturing and using electricity from the air. It's the electricity formed, for instance, when *water vapor* collects on microscopic*particles* of dust and other material in the air. But until now, scientists lacked adequate knowledge about the processes involved in formation and release of electricity from water in the atmosphere, Galembeck said.

   Scientists once believed that water droplets in the atmosphere were electrically neutral, and remained so even after coming into contact with the electrical charges on dust particles and droplets of other liquids. But new evidence suggested that water in the atmosphere really does pick up an electrical charge.

   Galembeck and colleagues confirmed that idea, using laboratory experiments that simulated water's contact with dust particles in the air. They used tiny particles of silica and aluminum phosphate, both common airborne substances, showing that silica became more negatively charged in the presence of high humidity and aluminum phosphate became more positively charged. High humidity means high levels of water vapor in the air ― the vapor that condenses and becomes visible as "fog" on windows of air-conditioned cars and buildings on steamy summer days.

   "This was clear evidence that water in the atmosphere can accumulate electrical charges and transfer them to other materials it comes into contact with," Galembeck explained. "We are calling this 'hydroelectricity,' meaning 'humidity electricity'."

   In the future, he added, it may be possible to develop collectors, similar to the solar cells that collect the sunlight *to produce* electricity, to capture hydroelectricity and route it to homes and businesses. Just as solar cells work best in sunny areas of the world, hygroelectrical panels would work more efficiently in areas with high humidity, such as the northeastern and southeastern United States and the humid tropics.

   Galembeck said that a similar *approach* might help prevent lightning from forming and striking. He envisioned placing hygroelectrical panels on top of buildings in regions that experience frequent *thunderstorms*. The panels would drain electricity out of the air, and prevent the building of electrical charge that is released in lightning. His research group already is testing metals to identify those with the greatest potential for use in capturing atmospheric electricity and preventing lightning strikes.

   "These are fascinating ideas that new studies by ourselves and  by other scientific teams suggest are now possible," Galembeck said. "We certainly have a long way to go. But the benefits in the long range of harnessing hydroelectricity could be *substantial."*

(“*Science Daily*”, August 2010**)**

**Practice 1. Who is this text intended for?**

**Practice 2. Choose the main idea of the article from the following.**

1. Lightning is a dangerous natural phenomenon killing a lot of people.

2. Galembeck’s idea that water in the atmosphere can accumulate electrical charges and transfer them to other materials it comes into contact with turned out to be true.

3. Modern scientists are trying to find ways of harnessing hydroelectricity for the benefit of people.

4. Scientists found new evidence that water in the atmosphere picks up an electrical charge.

**Practice 3. Re-arrange the sentences in logical order.**

1. Developing the idea of hydroelectricity collector might help prevent lightning from forming and striking;

2.  Thinks it may be possible to develop collectors to capture hygroelectricity and route it to homes and businesses.

3. Gamelbeck thinks that it’s not so easy and quick to solve the problem of harnessing hydroelectricity but he is sure it will benefit people.

4. Galembeck and colleagues confirmed the idea that water droplets in the atmosphere weren’t electrically neutral using laboratory experiments.

5. Scientists have been trying to find the way of harnessing electricity for centuries.

6. Fernando Galembeck is trying to understand how electricity is produced and        discharged in the air.

**Practice 4.  Give your own ideas of a device which would be able to accumulate electricity from the air and how it would work.**

**Practice 5. Make a review of the article (see Appendix 2 on p.13).**

**Text C. Is lightning good or bad?**

**Read the text and write a letter to your friend to tell him/her what interesting facts you’ve learnt.**

   The intensity of lightning is tremendous. When we hear noises on our radio we conclude that a storm is occuring somewhere in the country. It is not really the case. Similar disturbances have been heard on radio in New York, San Francisco, and elsewhere. It has been proved, moreover, that a powerful flash of lightning in the jungle of India or over the South States suffices to produce disturbances on every radio throughout the world.

    Lightning performs some very useful services for mankind. Every stroke of lightning produces some quantity of nitric acid from the nitrogen, hydrogen, and oxygen of the air. About 100,000 tons of nitric acid  are produced in this way each year. It is more than man can produce nitrogen by the artificial process.