**TEXT**

**THE WHEEL, STEAM CARRIAGES AND RAILWAYS**

One of mankind’s earliest and greatest inventions was the wheel. Without it there could be no industry, little transportation or communication, only crude farming, no electric power.

Nobody knows when the wheel was invented. There is no trace of the wheel during the Stone Age, and it was not known to the American Indians-until the White Man came. In the Old World it came into use during the Bronze Age, when horses and oxen were used as work animals. At first all wheels were solid discs.

The problem to be solved was to make the wheels lighter and at the same time keep them strong. At first holes were made in the wheels, and they became somewhat lighter. Then wheels with spokes were made. Finally, the wheel was covered with iron and then rubber.

Light two-wheeled carriages were used widely in the ancient world. As time passed they were made lighter, stronger, and better. Later people joined together a pair of two-wheeled vehicle. At first, only kings and queens had the privilege of driving in them.

In the West the first steam carriage was invented in France. The three-wheeled machine had the front wheel driven by a two-cylinder steam engine, and carried two people along the road at a walking pace. It was not a great success, as the boiler did not produce enough steam for keeping the carriage going for more that about 15 minutes.

The steam engine appeared in 1763. It was followed by several improved steam road carriages. Their further development was prevented by railway companies. The rapid spread of railways in the United Kingdom was due largely to George Stepherson, who was an enthusiast as well as a brilliant engineer.

He demonstrated a locomotive that could run eighteen kilometers an hour and carry passengers cheaper that horses carried them. Eleven years later Stepherson was operating a railway between Stockton and Darlington. The steam locomotive was a success.

In Russia the tsar’s government showed little interest in railway transportation. After long debates the government, which did not believe in its own engineers, finally decided to invite foreign engineers to submit(представить) projects for building railways in Russia.

Yet at the very time when foreign engineers were submitting their plans, in the Urals a steam locomotive was actually in use. It had been invented and built by the Cherepanovs, father and son, both skilful mechanics and serfs (крепостные). The first Russian locomotive was, of course, a “baby” compared with the locomotives of today. Under the boiler (котёл) there were two cylinders which turned the locomotive’s two driving wheels (there were four wheels in all). At the front there was a smoke stack (труба), while at the back there was a platform for the driver.

**b) Answer the following questions.**

**1.** What kinds of animals were used for work during the Bronze Age?

2. What were the first wheels like?

3. What are the stages in the development of the wheel?

4. How many people did the first steam carriage carry?

5. Who demonstrated the first locomotive in the United Kingdom?

6. Was the Russian government interested in railway transportation?

7. Who were the Cherepanovs?

8. What was the first Russian locomotive like?

9. Are the locomotives widely used in Russia?

10. What kind of locomotives are used in Russia now?

Перевести текст письменно и ответить на вопросы!

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