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TEXT KEY

PART I: POWER

Chapter 1: James Watt and the Invention of the Steam Engine

Comprehension Questions (Page 18)

1. Cattle and horses were used to cultivate the fields. Windmills and water wheels were employed to grind corn and wheat. Most of the tools and machines at this time in history were worked by hand.
2. James Watt's most valuable invention was harnessing the power of steam in the late 1700s.
3. Beelzebub got its name from the way it wheezed, snorted, and puffed fire and smoke.

NOTE: *Beelzebub* is a term that comes the Bible and means "Lord of Zebûb," that is "Lord of things that fly." In 2 Kings 1.2–3,6,16, Beelzebub refers to the Philistine god of Ekron. In the New Testament Beelzebub refers to Satan, the prince of demons (Mark 3:22; Matthew 12.24, 27; and Luke 11.15,18–19).

4. The people used the steam engine to pump water and to hoist coal out of the mines. It was also used in grain mills to grind wheat and corn into flour.
5. The millers and their employees opposed the new engine because they were afraid of losing their livelihood, so they set fire to Mr. Watt's model mill. Financially, Boulton and Watt were in great need because all their profits had gone back into the business, and they needed additional funds to produce the new engines. They even had to mortgage the patents on Mr. Watt's invention to raise capital. Their

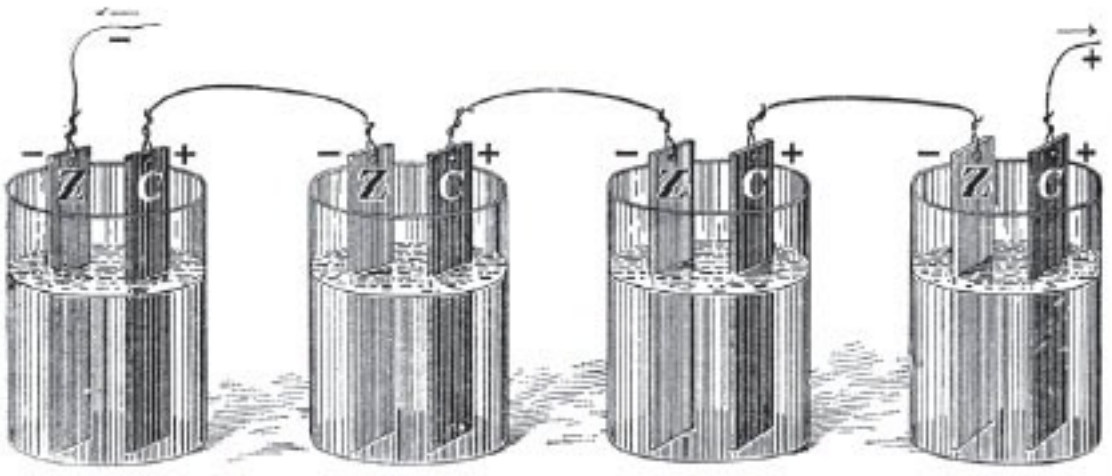
customers also refused to pay them, causing the partners to lose more money. On top of all this, dishonest people tried to get Parliament to take away their patents; some even used their ideas illegally.

6. In memory of James Watt, people around the world named a measurement of electric power after this great inventor. The amount of light from light bulbs is measured in *watts*.

Chapter 2: Invention of the Electric Engine and Electric Locomotive

Comprehension Questions (Page 32)

1. The two main parts of an electric engine are the *dynamo*, which produces the electricity, and the *motor*, which converts the electricity into power.
2. Otto von Guerike invented the first electrosatic generator, which produced static electricity. Sir Isaac Newton improved the machine by replacing the globe of sulfur with a glass disk, which could be easily turned, and by using rubber and silk brushes that rubbed against the disk to produce the static electricity.



BATTERY: *Z*, ZINC PLATES; *C*, COPPER PLATES

3. Count Alessandro Volta invented the first battery. He discovered that copper and zinc immersed in a brine (saltly water) produced an electric current.
4. A wise sailor placed a magnetized needle upon a float to learn which way was north. (This is called a compass.)
5. Professor Ørsted discovered that by passing electricity through a wire makes a magnet of the wire. This discovery