The communications revolution began early in the 19th century with the development of different types of experimental telegraphs in the United States and Europe. During the 1820s, Joseph Henry, an American physicist, devised the first telegraph using electromagnets that transmitted signals over more than a mile of wire. In 1836, two British physicists, William F. Cooke and Sir Charles Wheatstone, built an instrument using five needles and five wires to send messages. However, the first practical telegraph machine was created by the American painter and inventor Samuel F. B. Morse in 1837.

After several years of work, which included the development of a special telegraph code, Morse convinced the United States Congress to fund the construction of the first long-distance telegraph line. The line was made of iron wire and was strung from point to point using glass doorknobs as insulators. It ran for 37 miles, from Washington, D.C., to Baltimore, Maryland. On May 24, 1844, Morse transmitted the first long-distance telegraph message: "What hath God wrought!"

Commercial uses for the telegraph spread quickly. The first money order was sent on June 1, 1845. Newspaper reporters began filing their stories by telegraph. Wall Street used the new technology to transmit price changes of stocks, and the stock ticker was introduced in 1867. Railroads used the telegraph to provide a more efficient transportation network, greatly improving the movement of goods across the country. The first telegraph cable linking California with the East Coast was completed by the Western Union Company in 1861. Telegraph lines linking the United States and Canada were also installed during this time.

The most difficult places to put telegraph lines were underwater. Attempts in the late 1840s failed due to poor insulation of the cables. In 1851, English brothers, Jacob and John Brett, laid a telegraph cable across the bottom of the English Channel. In 1854, an American businessman named Cyrus W. Field organized a company to lay a cable across the Atlantic Ocean.

It took over 12 years and five attempts to successfully lay the cable. The first two lines broke. The third line, completed in August 1858, carried the first transatlantic telegraph message, but it failed after only four weeks of service. A fourth attempt was made in 1865, but this cable also broke. Finally, in 1866 the British steamship Great Eastern successfully completed the laying of a cable from Valentia, Ireland, to Heart's Content, Newfoundland, in Canada. By 1900, 15 cables stretched across the floor of the Atlantic Ocean. This was the beginning of instantaneous communication across the seas and around the world.

Questions

1. **Following Chronological Order**  Describe the inventions that led up to the first practical telegraph.

2. **Clarifying**  What event marked the beginning of rapid communications between continents?

3. **Making Inferences**  How do you think the first transatlantic telegraphs changed communication?
**CHAPTER 12**

**RETEACHING ACTIVITY**  
**China Resists**  
**Outside Influence**

**Determining Main Ideas**  Choose the word that most accurately completes each sentence below. Write that word in the blank provided.

- extraterritorial rights  
- sphere of influence  
- opium  
- Dowager Empress Cixi  
- special economic zones  
- Open Door Policy  
- Boxer Rebellion  
- nationalism  
- Taiping Rebellion  
- rice  
- cotton  
- Treaty of Nanjing

1. Crop upon which China's agricultural economy was based: ____________________________

2. Narcotic from the poppy plant that found a market in China: ____________________________

3. Clash between the British and the Chinese: ____________________________

4. Treaty that gave Britain the island of Hong Kong: ____________________________

5. Exempted foreigners from Chinese law at Guangzhou and four other Chinese ports: ____________________________

6. Areas today on the coast of China established to attract but also control foreign investment: ____________________________

7. Movement led by Hong Xiuquan to build a kingdom in which no one would live in poverty: ____________________________

8. Qing ruler in the last half of the 19th century: ____________________________

9. A "foothold" in China; an area where a foreign country controlled trade and investment: ____________________________

10. U.S. proposal that China be open to merchants of all nations: ____________________________

11. Campaign against foreigner privilege by the Society of Righteous and Harmonious Fists: ____________________________

12. Feeling that emerged in China partly as the result of the Boxer Rebellion: ____________________________