Chapter 19: Technological Advances and Economics in the Global Age: 19-1a Transportation
Book Title: The Earth and Its Peoples: A Global History 7th Edition Update, AP® Edition
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19-1a Transportation

According to one estimate, Constantinople, the capital of the Byzantine Empire, had a population of 200,000 in 1000 CE and was the only European city to be ranked among the world's ten largest cities. By 1500 Paris had joined Constantinople on the list, and by 1800 so had London. Beijing, the most populous city, then had over 1 million inhabitants, about twice as many as the largest city in 1000.

Industrialization deeply affected population distribution in the course of the nineteenth century. By 1900 all of the world's top ten cities were European or American except for Tokyo. The largest, London, had 6.4 million inhabitants. European dominance waned in the first half of the twentieth century. In 1950 Shanghai, Buenos Aires, Tokyo, and Calcutta (now Kolkata) were on the list, and 12.4 million people resided in the largest city, New York. Today, two European cities, Moscow and Istanbul (formerly Constantinople), make the top ten. Of the rest, four are in China and two in South Asia. Tehran (Iran) and Sao Paulo (Brazil) round out the list. New York is nineteenth. The largest city, Shanghai, has a population of 17.8 million.

In Asia and the Indian Ocean basin, the rickshaw contributed to this transformation of urban life just as streetcars had earlier done in Europe and America. Before 1850, Japanese civilians either walked or were carried in plain (*kago*) or fancy (*norimono*) *palanquins*, small seats or cabins suspended from poles carried on the shoulders of bearers. A palanquin required a minimum of two men, or more if the trip was long or the rider wanted to display his or her wealth. The rickshaw cut the expense of personal transport in half and doubled its speed because a rickshaw puller, unlike palanquin bearers, usually ran rather than walked. Rickshaw transport effectively enlarged the area of cities that had previously been scaled for pedestrian access, just as public transport made it possible for Bostonians and Londoners to live away from the city center. Rickshaws also avoided the plague of Western cities: horse manure.

The technical specifications of the first rickshaws have not survived, but the claim that "it does not shake a much as the usual cart" suggests that what made the vehicle a sensational success from the very start was the provision of *leaf springs* (arced steel strips bound at the ends to form an ellipse). The first leaf spring design had been pa-tented in England in 1804 and was probably in use on carriages imported into Japan in the 1850s. Early drawings and photographs of rickshaws consistently show them with leaf springs.

AP® Exam Tip

Compare the diffusion of technology from this time period to earlier time periods.

Japanese-made rickshaws stimulated the growth of big Asian cities like Shanghai, Beijing, Singapore, Calcutta, and Bombay and reached across the Indian Ocean to Madagascar and South Africa. Tens of thousands of unskilled workers flocked to these cities to become rickshaw pullers in the way that European villagers entered the urban economy by way of unskilled manufacturing jobs. Like European mill-hands, rickshaw pullers endured miserable living conditions and occasionally banded together in strikes, particularly in opposition to streetcar companies that threatened their livelihoods. However, streetcars could not deliver passengers directly to their homes or take children safely to school, so the rickshaws survived and evolved into the pedicabs and auto-rickshaws that are still common today.

First Aluminum Airplane

From the Wright Brothers' first aircraft in 1903 down to the air battles of World War I, wood, cloth, and wire made up the wings and bodies of airplanes. Metals were too heavy for anything but engines and weapons until German manufacturer Hugo Junkers designed the first aluminum flying machine, shown here, in 1917.

Museum of Flight Foundation/Getty Images

Chronology

Developments in Technology, Exchange, Society, and the Environment

1895	Lumiere brothers project the first motion picture in Paris
1900	London is the world's largest city with 6.4 million people
1903	Wright brothers fly first airplane Marie Curie wins Nobel Prize in physics for her work on radioactivity
1907	Bakelite, the first plastic, is invented
1908	Founding of Yasui Sewing Machine Company (later Brother Industries)
1912	First feature-length movie releases in India
1913	Henry Ford introduces assembly-line production
1916	Albert Einstein formulates relativity theory
1920	Commercial radio begins in United States
1923	Margaret Sanger opens first birth control clinic
1925	Commercial radio begins in Japan
1931	Settlement house champion Jane Addams wins Nobel Peace Prize
1932	Empire State Building opens
1955	Jonas Salk develops polio vaccine
1961	Jack Kilby and Robert Noyce invent the silicon chip
1962	Light-emitting diodes (LEDs) become basis of modern telecommunications

1970	First celebration of Earth Day
1979	Three Mile Island partial nuclear meltdown occurs
1986	Chernobyl nuclear reactor explodes
2007	First Apple iPhone popularizes smartphones worldwide
2010	China becomes world's second largest economy
2020	Shanghai is the world's largest city with 17.8 million people

The rickshaw provides a rare example of an Asian invention transforming urban life in ways unfamiliar to Europeans and Americans. The more frequently told stories focus on Western inventions like railroads and automobiles transforming the non-Western world. Yet even there, the innovations of the Industrial Revolution that imperialist governments and businesses exported to their colonies affected the non-Western world differently than later innovations that spread world-wide in the first half of the twentieth century. Whereas railroads and automobiles required steel mills and factories, other new inventions were comparatively inexpensive and adaptable to local customs.

Of all the innovations of the time, however, none attracted public interest more than airplanes. In 1903 two young American mechanics, **Wilbur and Orville Wright** (American bicycle mechanics; the first to build and fly an airplane, at Kitty Hawk, North Carolina, December 7, 1903. (*p.* 561)) , built the first aircraft that was heavier than air and could be maneuvered in flight. From that moment on, airplanes fascinated people. In 1911 a French pilot flew 6,500 letters from one city in British India to another 8.1 miles (13 kilometers) away, thus inaugurating the first important use of air transport. Military observation and aerial warfare came second. During the Great War the exploits of air aces relieved the tedium of news from the front, but no one anticipated the massive bombing raids of World War II.

The first flight of **KLM Royal Dutch Airlines** (Oldest major airline, operating since 1920 in Europe and connecting to the Dutch East Indies in 1929. (*p.* 562)) , the oldest continuously operating airline, took off in 1920. That year it carried 440 passengers and 22 tons of cargo. Scheduled service to a number of northern European cities soon followed. Its most important service, as an air link to the Dutch East Indies (now Indonesia), began in 1929. Every country with imperial possessions saw international air service as a political necessity. Two of the oldest airlines, however, Qantas in Australia and the German-owned

precursor of Avianca in Colombia, functioned entirely outside of Europe.

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