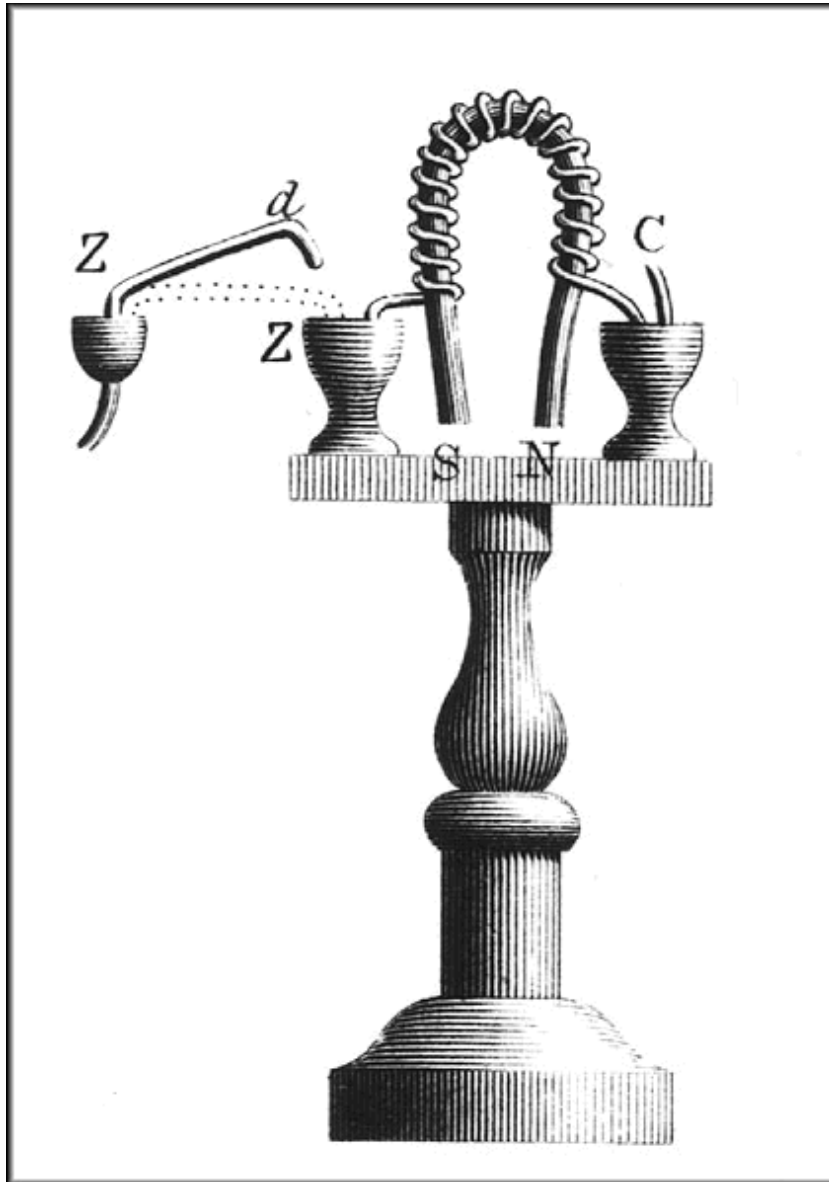


Electricity & Electricity Generation

GEOS 24705/ ENST 24705

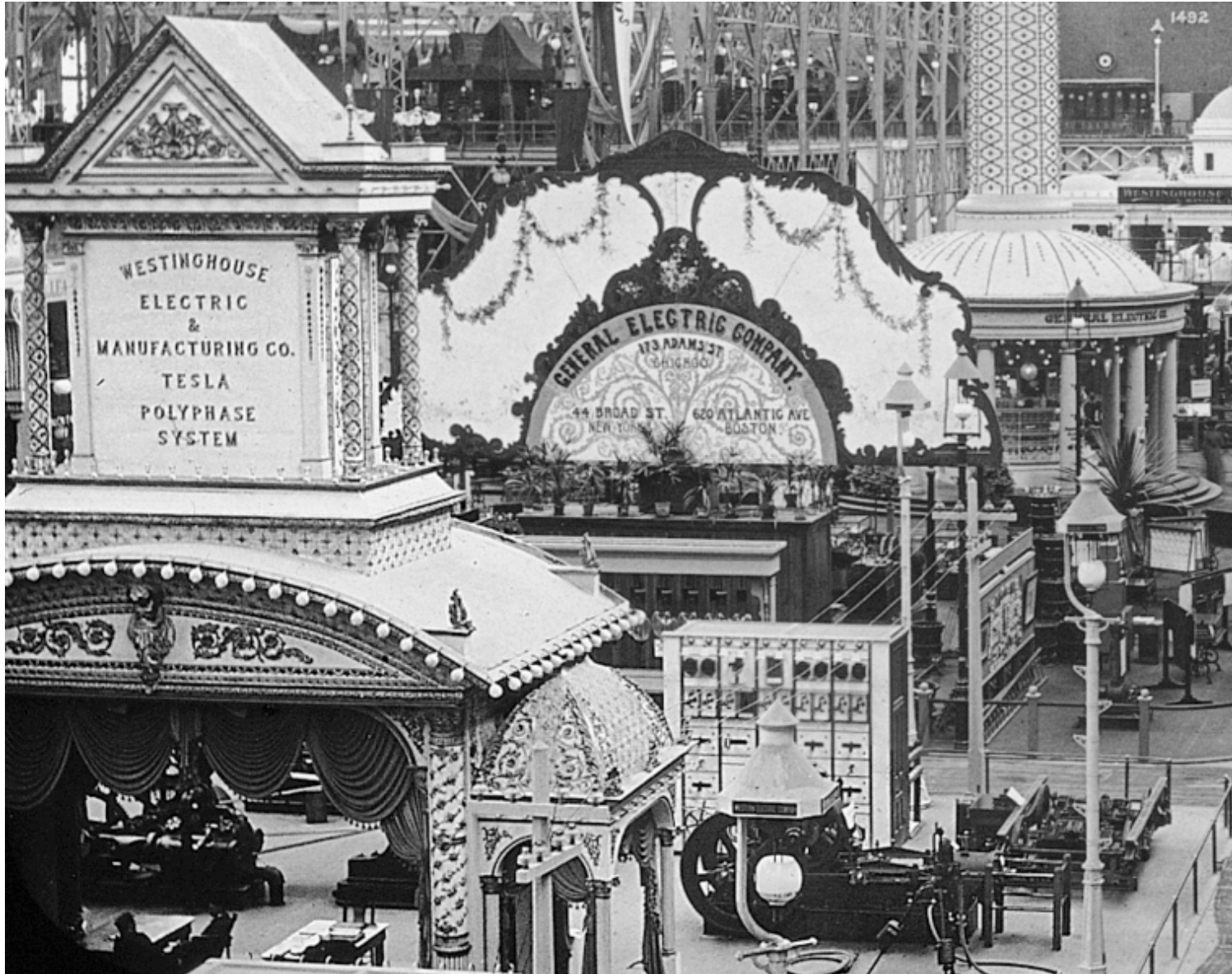
Electric currents create magnetic fields



<https://www.youtube.com/watch?v=V-M07N4a6-Y>

Electromagnet,
1824 (Sturgeon)

Edison vs. Tesla at 1893 Chicago World's Fair



Tesla's system already had most characteristics of the modern electricity system in 1893..

World's Fair + choice at Niagara 2 years later committed us to AC

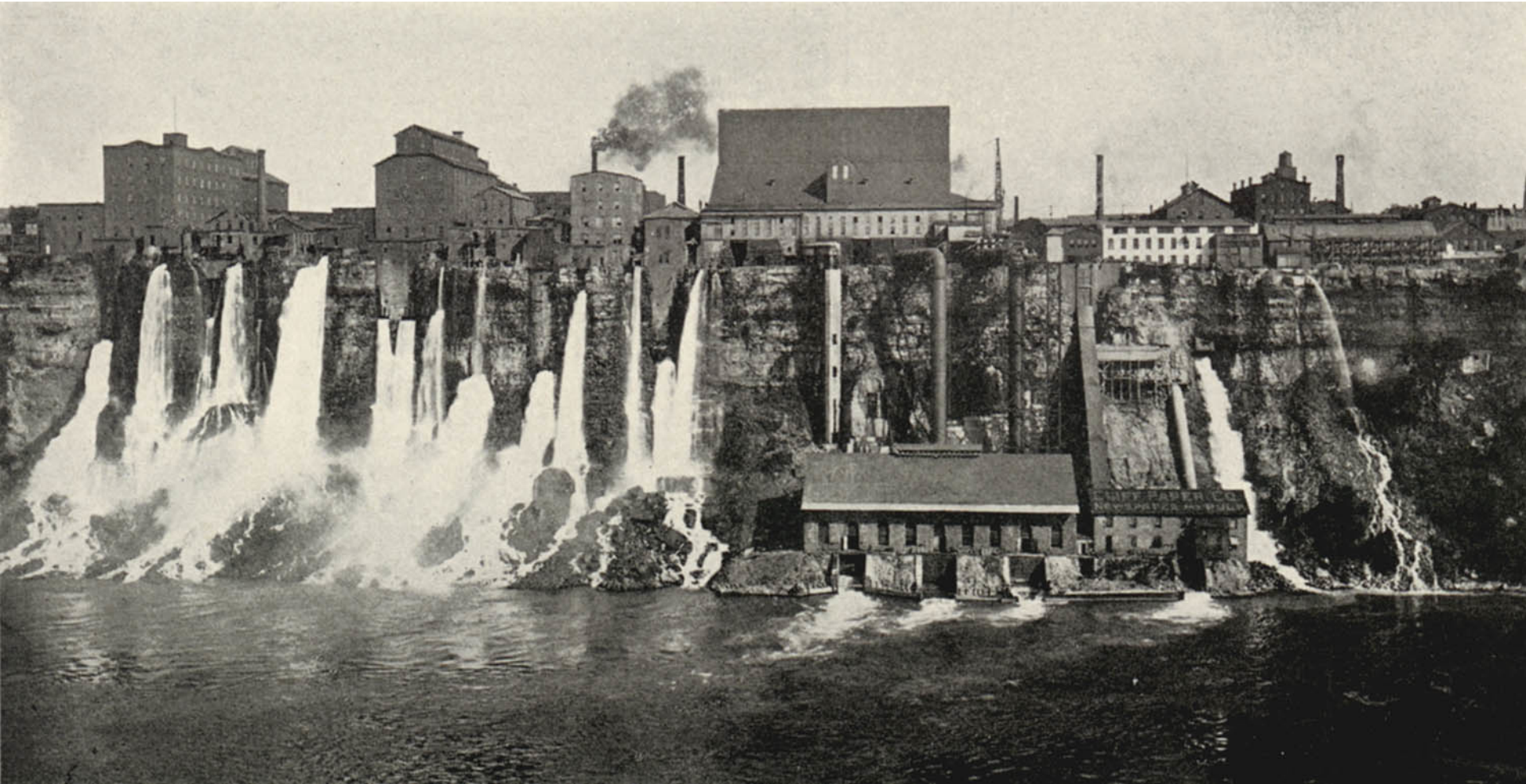
Comparatively little evolution after choice was made – standardization of frequencies.

By 1893 generators much larger than Edison's first

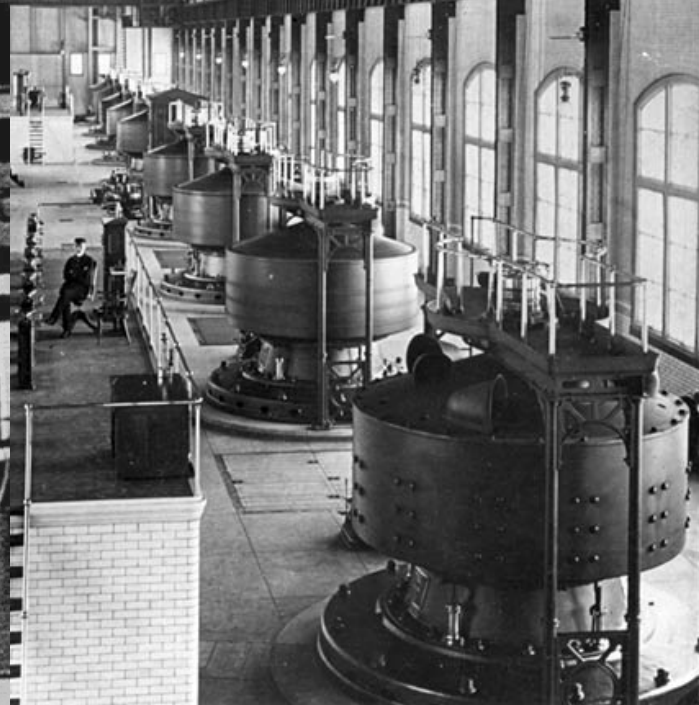
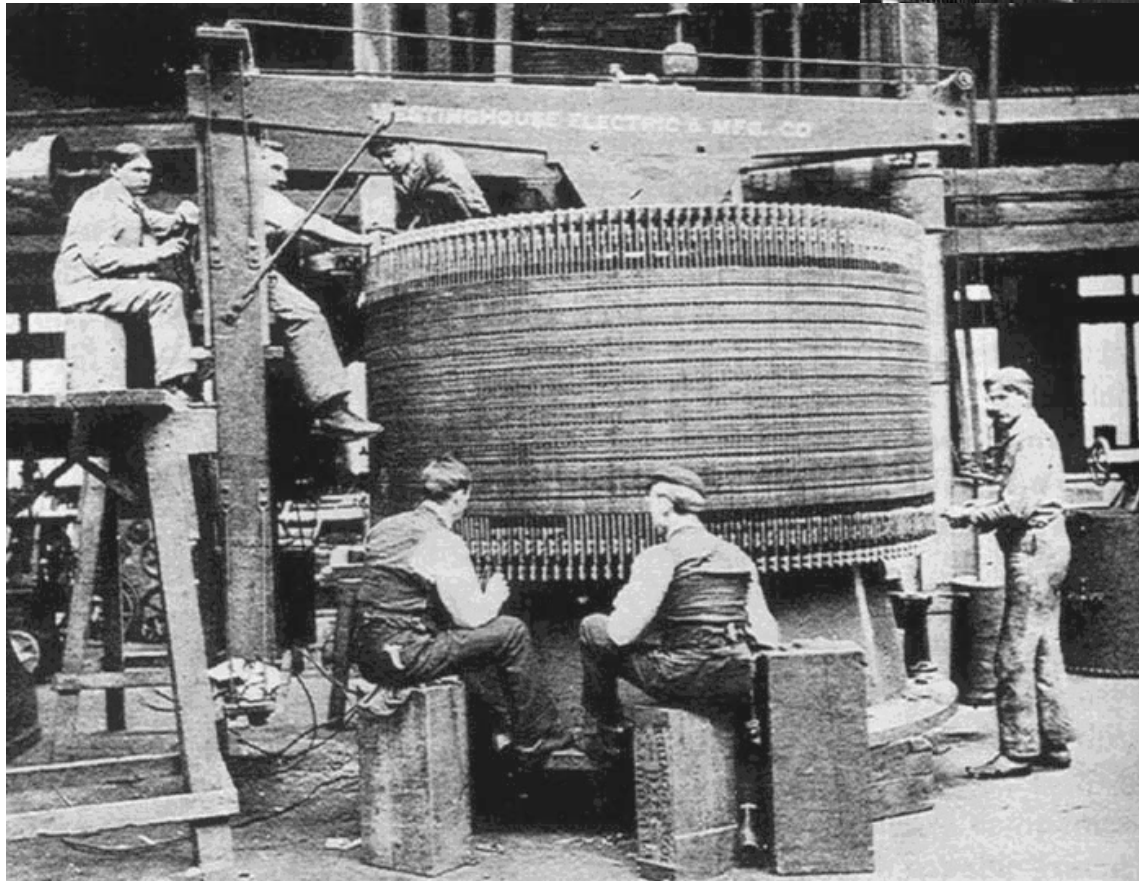


1000 hp AC generators exhibited in
Chicago World's Fair

Tesla's system installed at Niagara Falls 1895-1897



Tesla's system installed at Niagara Falls 1895-1897



...which meant the first overhead power lines

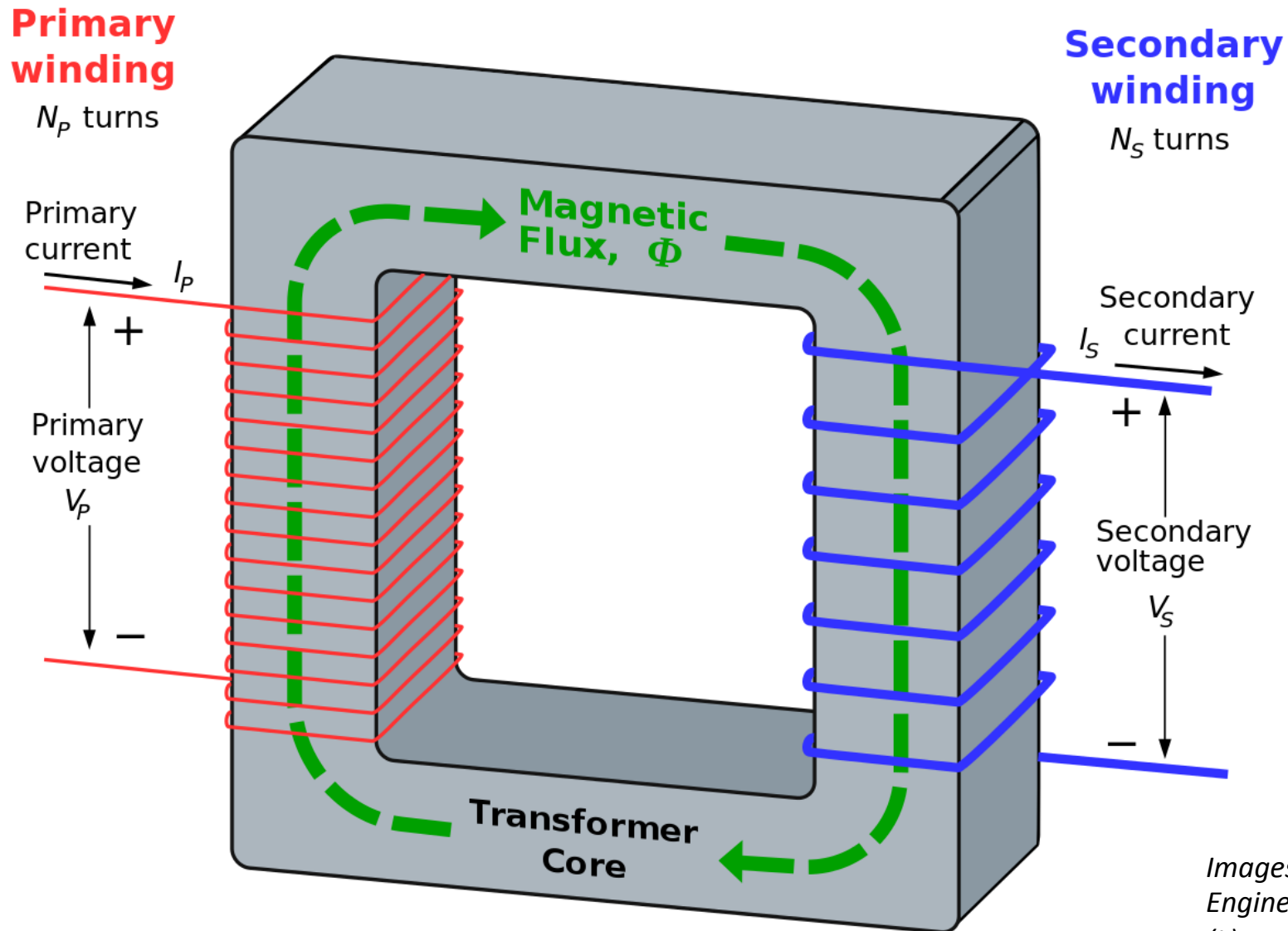
11,000 volt lines
(later upgraded to 22,000 V)

carrying power from
Niagara to Buffalo,
~ 20 miles away



Notice: no automobiles yet. The first automobile company had started only 2 years before; by 1895 only ~10 total cars had been sold in the U.S.

Voltage transformation is easy with AC power



Images from ATSI
Engineering Services
(L) and The Electricity
Forum (R)