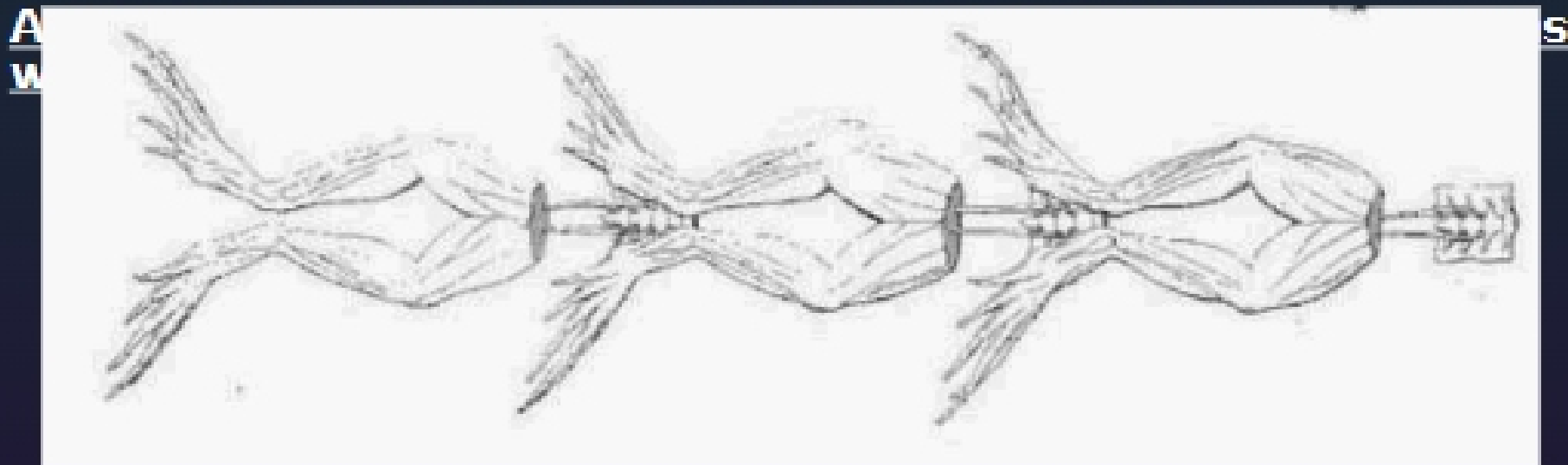


Chapter 4B – The Nervous System and Sensory Physiology



Luigi Galvani (1737-1798)

- First to propose that nerve impulses were **electrical**.
- Stimulating the leg nerves of a dead frog with electricity made them twitch (also led to the invention of the **battery**!)
- Concluded that tissues contain innate vital force called *animal electricity*.
 - Brain secretes animal electricity → Nerves conduct the fluid to the muscles
 - Wrong about the animal electricity fluid, but correct that nerve impulses are conducted by electricity.
- By the 1800's, electricity in nerve impulses was generally accepted as fact.
- Better than Descartes' hollow tubes & animal spirits, or Hartley's *vibratiuncles*, but was still similar in a critical way:



Gustav Fritsch (1838–1927) and Eduard Hitzig (1838–1907)

- Hitzig noticed motor activity could sometimes be induced by touching exposed brain tissue in soldiers with open head wounds.
- Hitzig and Fritsch decided to apply electric current to the cortex surface of rabbits and dogs to see if it would lead to reliable results.
- **The electrical stimulation method involves stimulating various areas of the cerebral cortex of live subjects and observing for motor responses.**
- Clear evidence of **significant localization of function** on the cortex (though their results had nothing in common with phrenological charts).

