1  The Baconian Creed

2  “The Mechanization of the World Picture”
   - The world viewed as a giant clockwork
   - Explanation in terms of mechanisms, not of purposes

3  Andreas Vesalius
   - De Humani Corporis Fabrica (On the Fabric of the Human Body)--1543

4  Medieval dissection

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11  Changes in Physiology & Anatomy
   - New university study (Padua)
   - New discoveries
     * Gabriele Fallopio: Fallopian tubes
     * Fabricius: valves in the veins

12  William Harvey
   - English
   - De Motu Cordis et Sanguinis (On the Motion of the Heart and the Blood) -- 1628
     * Notice emphasis on motion
     * Argument by observation, experiment, and quantitative analysis
     * Not free of mystical elements

13  Galenic Physiology
   - Blood as two separate systems
     * Veins
     * Arteries
   - Ebb and flow of blood in these systems
   - Lungs function solely to cool the blood
   - Heart functions to infuse “vital spirit”

14  Harvey’s Physiology
   - Single system, with veins and arteries connection in two circulation systems
Lesser system moves blood through the lungs
Great system moves blood through the body
Connections could not be seen -- but were inferred

The heart is a pump--a machine

15 Circulatory system
16 Harvey’s Experimental Method
17 Francis Bacon (1561-1626)
  - inductive method
  - Novum Organum (the “New Means to Knowledge”) (1620)
18 Interferences in Human Understanding
  - idols of the tribe: weaknesses of human nature & the senses
  - idols of the cave: weaknesses of the individual, due to education, personality, or talents
  - idols of the marketplace: weaknesses in society, especially language and its mis-use
  - idols of the theater: dogmas of philosophy, which interfere with understanding
19 New Atlantis (1627)
20 “Solomon’s House”
  - The glory of the state lies in the promotion of knowledge and “useful arts”
  - Inspiration for scientific societies in the 17th and 18th centuries
21 “Ancients” vs “Moderns”
  - What is the measure of the human condition?
  - Does culture aspire to recover past glories or to create new ones?
22 Bacon on Discovery and Invention
  - we should notice the force, effect and consequences of inventions which are nowhere more conspicuous than in those three which were unknown to the ancients; namely printing, firearms and the compass. For these three have changed the appearance and state of the whole world; first in literature, then in warfare, and lastly in navigation; and innumerable changes have been thence derived so that no empire, sect or star appears to have exercised a greater power and influence on human affairs than these three mechanical discoveries.
23 Bacon on Human Ambitions
  - It will perhaps be as well to distinguish three species and degrees of ambition. First that of men who are anxious to enlarge their own power in their country, which is a vulgar and degenerate kind; next that of men who strive to enlarge the power and empire of their country over mankind, which is more dignified but no less covetous... 
24 The Highest Ambition
  - ...But if one were to renew and enlarge the power and empire of mankind
in general over the universe such ambition (if it may be so termed) is both more sound and more noble than the other two. Now the empire of man over things is founded on the arts and sciences alone for nature is only to be commanded by obeying her

25  The Idea of Progress
- Novel notion at the time
- Source of progress is knowledge and material well-being

26  The Rise of Organized Science
- 1662: **Royal Society for the Promotion of Natural Knowledge, London**
- 1666: **Royal Academy of Sciences, Paris**

27  Question:
- Who is more “modern,” Francis Bacon or William Harvey? Why?