



Tang and Song Dynasties: The Genius That Was China, Part I

I. Dynasties

A. Qin (Ch'in) Dynasty (221 BC —210 BC)

1. Shi Huangdi (Shih Huang Ti)

— “First Emperor”

2. Li Si (Li Ssū) — chief minister

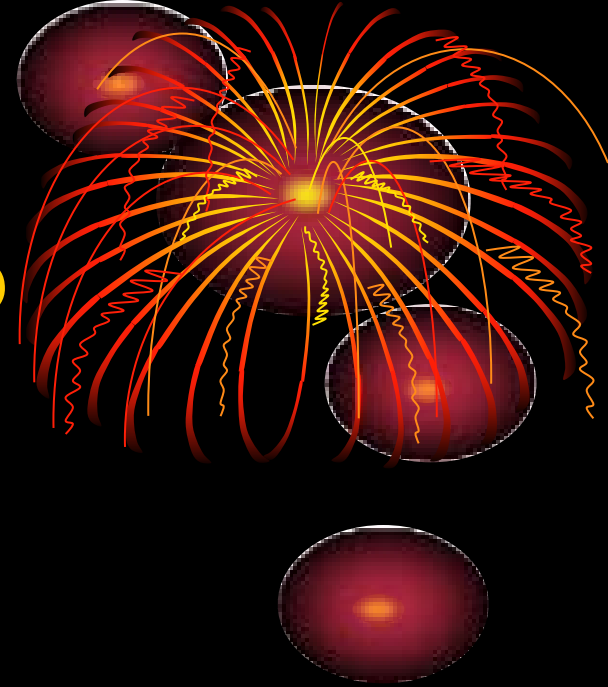
B. Han Dynasty (206 BC–AD 220)

C. Six Dynasties (AD 220–589)

D. Sui Dynasty (589–618)

1. Wangdi (589–605)

2. Yangdi (605–618)



I. Dynasties (continued)

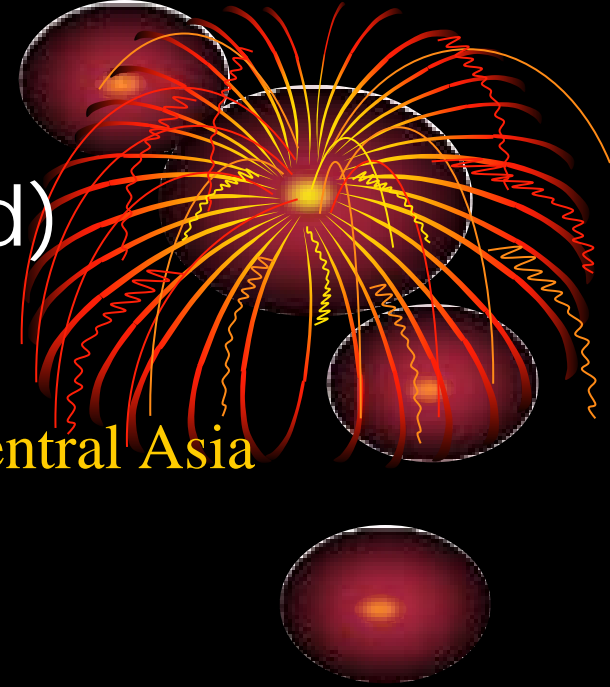
E. Tang (T'ang) Dynasty (618–907)

1. Controlled territory as far west as Central Asia
2. Capital: Changan
3. Poets: 3000 known to us

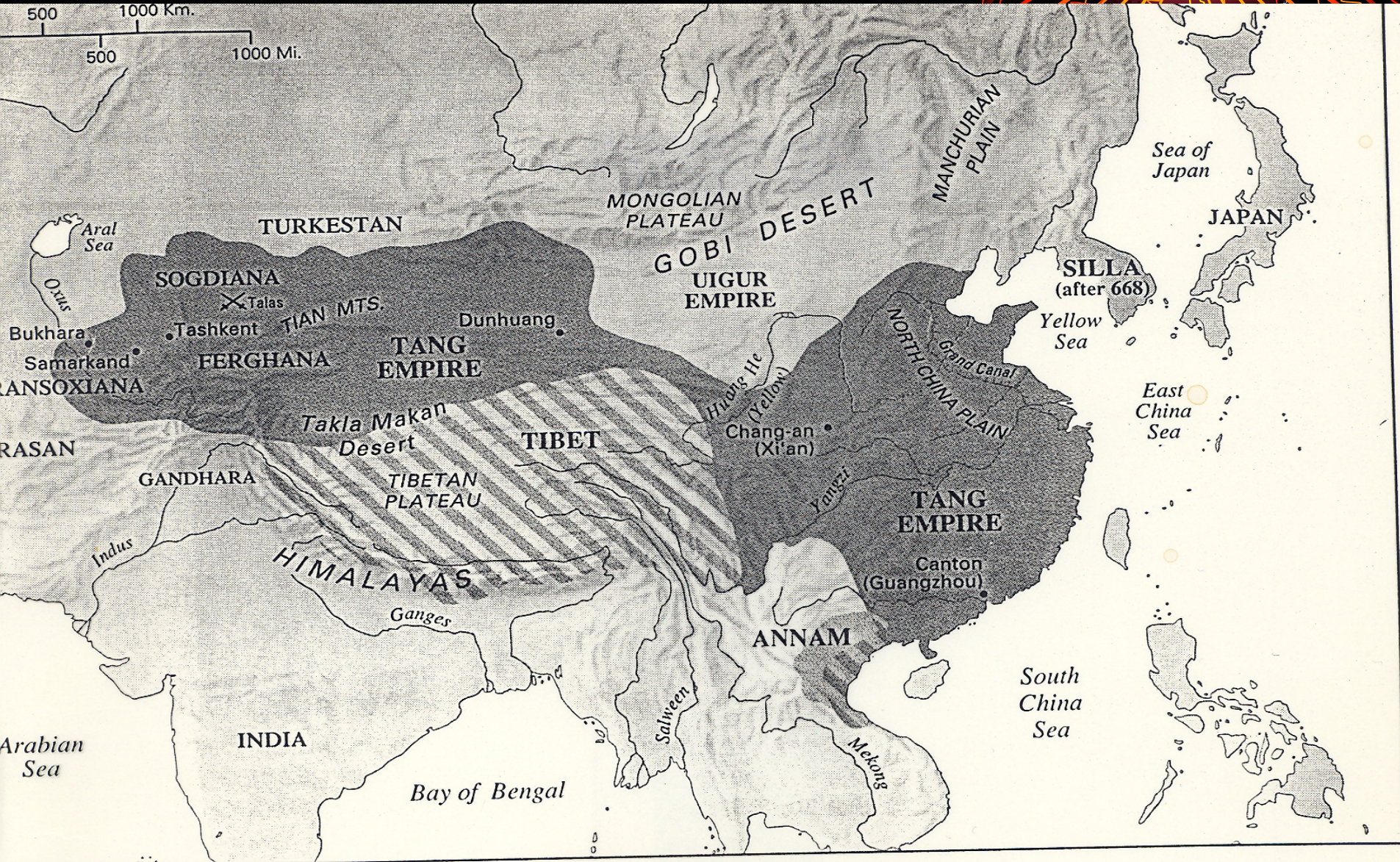
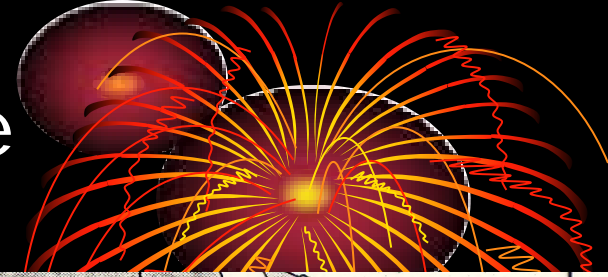
F. Five Dynasties (907–960)

G. Song (Sung) Dynasty (960–1279)—only in south after 1127

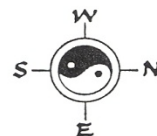
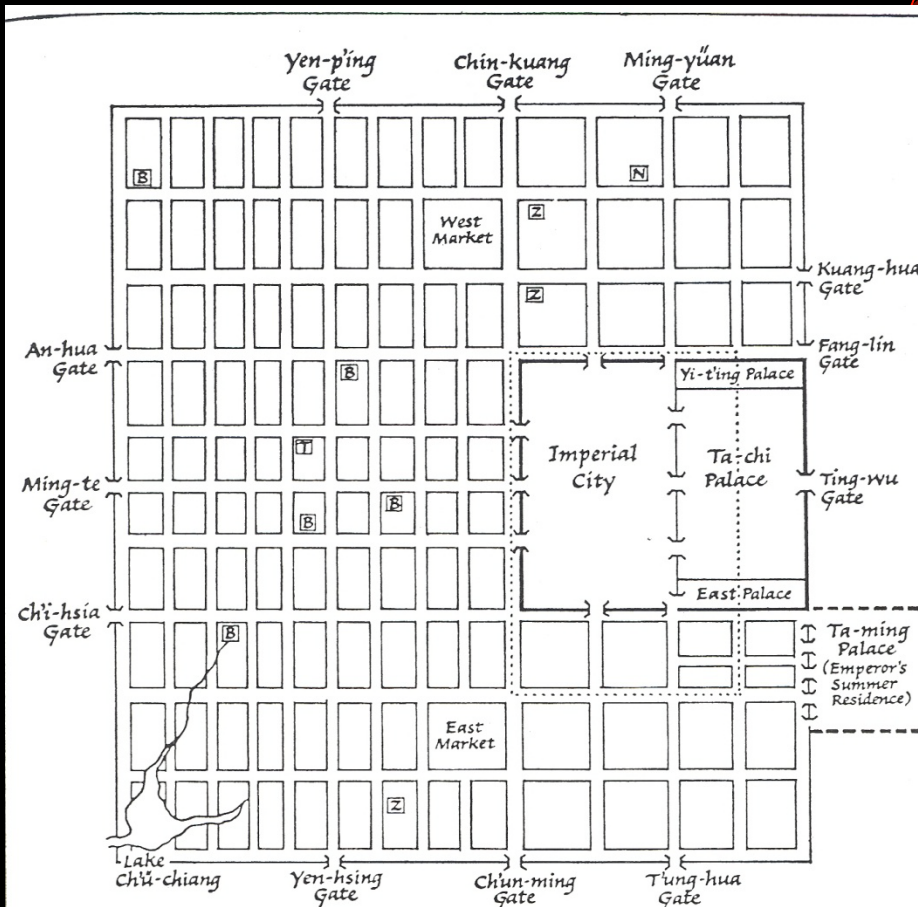
1. Height of technological innovation
2. *A Record of Musing on the Eastern Capital* (Hangzhou) (1235)



Tang Empire



Changan



MAP 19

T'ANG'S CAPITAL: CH'ANG'AN
Total Area: 972 ch'ing or 14,752 acres

)(City Gate

Famous Churches and Temples: [B] Buddhist;

[N] Nestorian; [T] Taoist; [Z] Zoroastrian

---- Walls of modern city of Sian

I. Dynasties (continued)

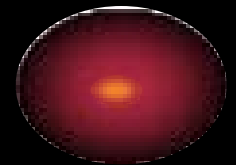
H. Jin (Chin) Dynasty (only in north: 1115–1234) — Jurchens

I. Mongols

1. Control north from 1215
2. Yuan Dynasty (controls both north and south: 1279–1368)

J. Ming Dynasty (1368–1644)

1. Voyages of Zheng He (Cheng Ho), “the Three-Jeweled Eunuch”
2. Focus on re-endorsing agrarian nature of economy; internal trade



II. The Celestial Empire

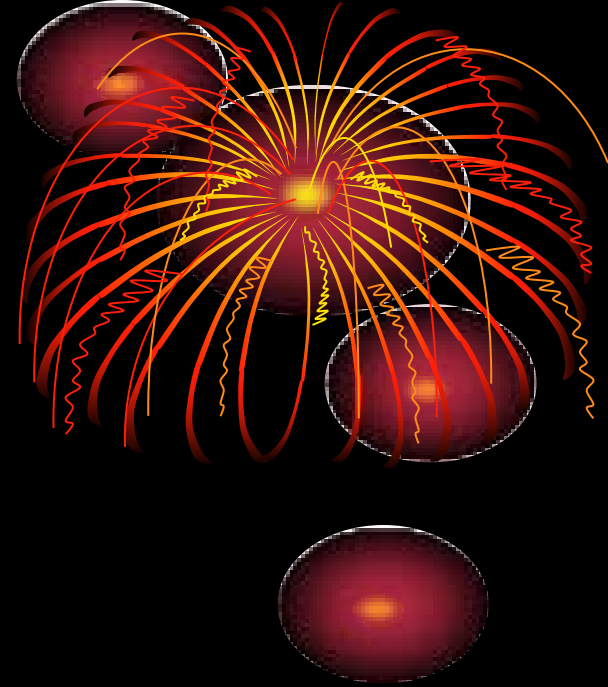
A. Intellectual/Cultural/Religious

B. Political

C. Social

D. Economic

E. Technological Achievements (see handout)



A. Intellectual/Cultural/Religious

1. *Tian Ming (T'ien-ming)* — Mandate of Heaven

2. *Qi (Ch'i)* – energy of nature

3. “Three Ways to One Goal”



3. “Three Ways to One Goal”

a. Confucianism

(1) Confucian Synthesis—Ideology that held the Empire together

(2) virtues: benevolence, propriety, righteousness, wisdom, trust-worthiness

(3) filial piety: to father and emperor

b. Taoism – (metaphysics, alchemy)

c. Buddhism – revival under Taizong (T'ai-tsung) Emperor (626–649)

(1) Xuanzang (Hsuan-tsang) (602?–669)

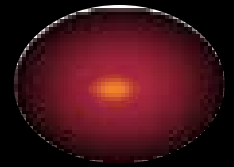
(2) “Empress” Wu (690–705)



Li Shimin as Emperor Taizong (r. 626–649)
receiving Ludongzan, ambassador of Tibet, at his
court; painted in 641 AD by Yan Liben (600–673)



A depiction of the Xuanzang on his journey to India. Japanese portrait from Kamakura period
(14th century)



The statue of Xuanzang at the Great Wild
Goose Pagoda in Xi'an, which was built to
house the texts he brought back from India



Great Wild Goose Pagoda in Xian (Chang'an),
built in 652, repaired by Empress Wu Zetian in 704



Official Imperial Portrait of Empress Wu Zetian



“Eighty-Seven Celestial People” draft of a
fresco by Wu Daozi (ca. 685—758)

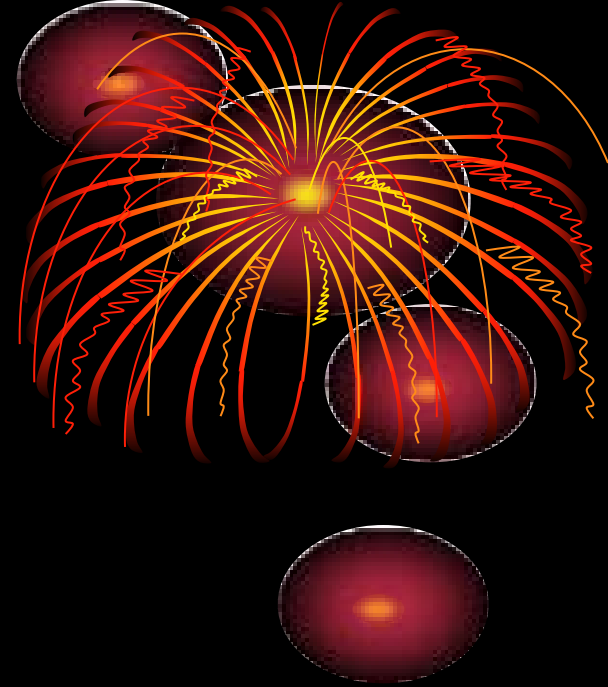


Empire of Empress Wu Zetian (ca. 700)

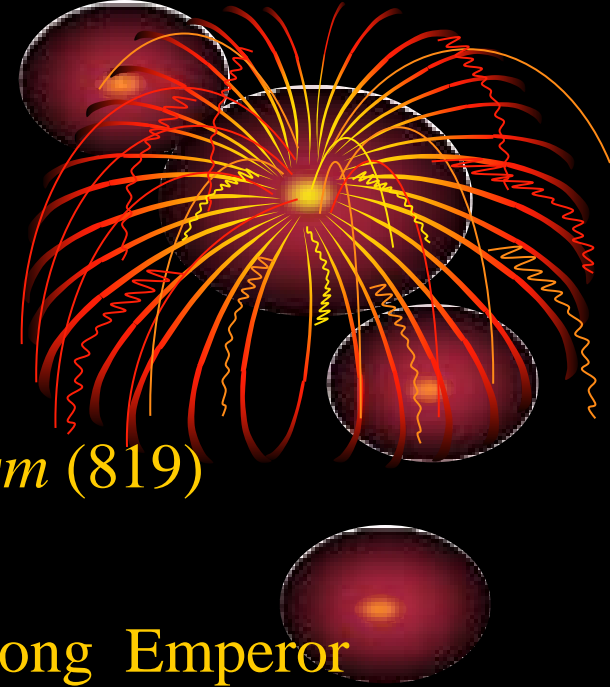


4. Four Poets

- a. Wang Wei (699–759)—Buddhist
- b. Li Bo (701–762)—Daoist
- c. Du Fu (712–770)—Confucian
- d. Bo Qui (772–846)—Confucian

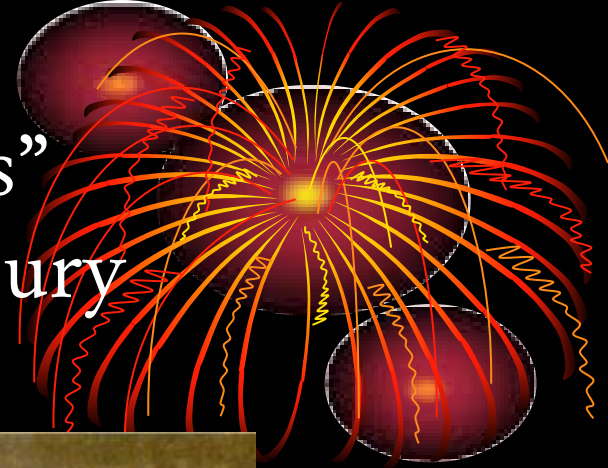


5. Revolt of Neo-Confucianism

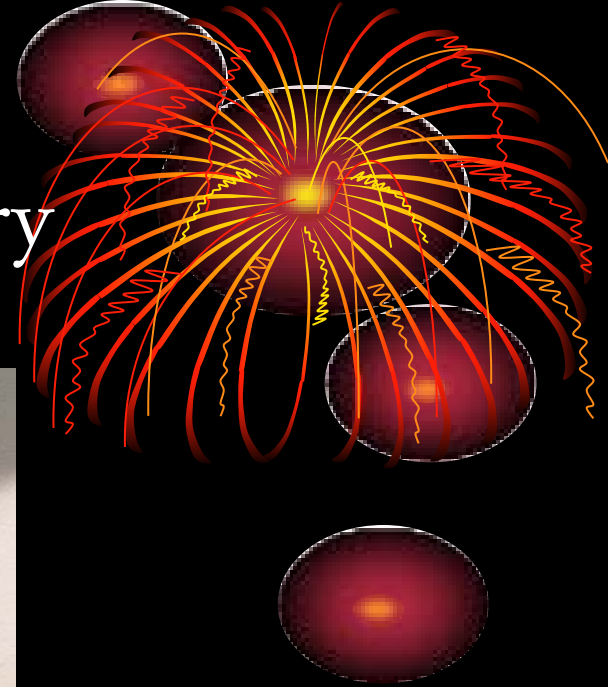


- a. Han Yu (786–824), *Memorial on Buddhism* (819)
- b. Persecution of Buddhism (840's) — Wuzong Emperor
- c. Zhu Xi (Chu hsi) (1130–1200) — philosopher

“Beauty with Flowers”
by Zhou Fang, 8th century

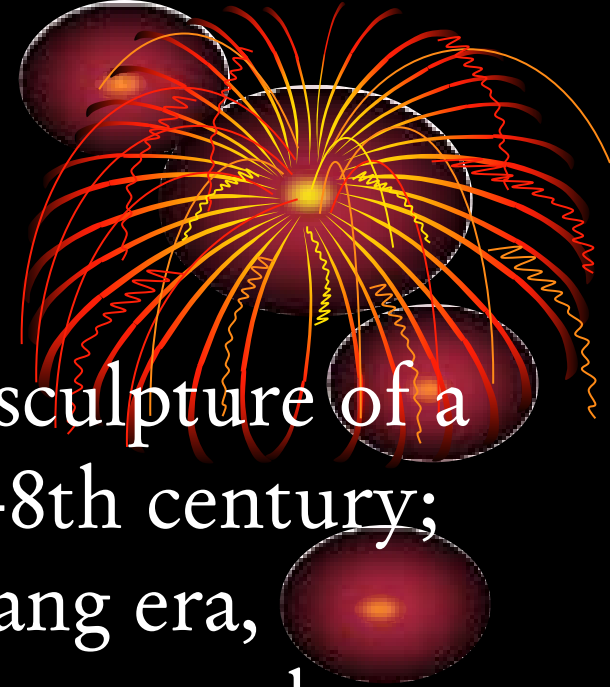


Woman playing polo, 8th century





A terracotta sculpture of a woman, 7th–8th century; during the Tang era, female hosts prepared feasts, tea parties, and played drinking games with their guests.



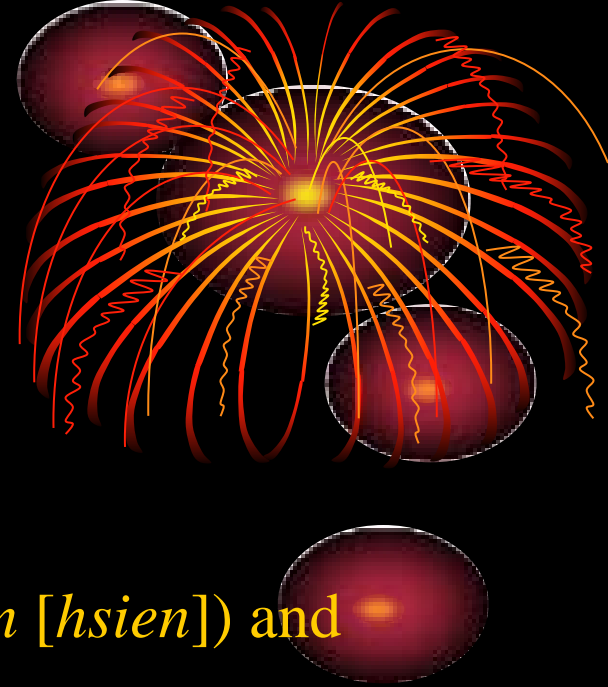
B. Political

1. Emperor

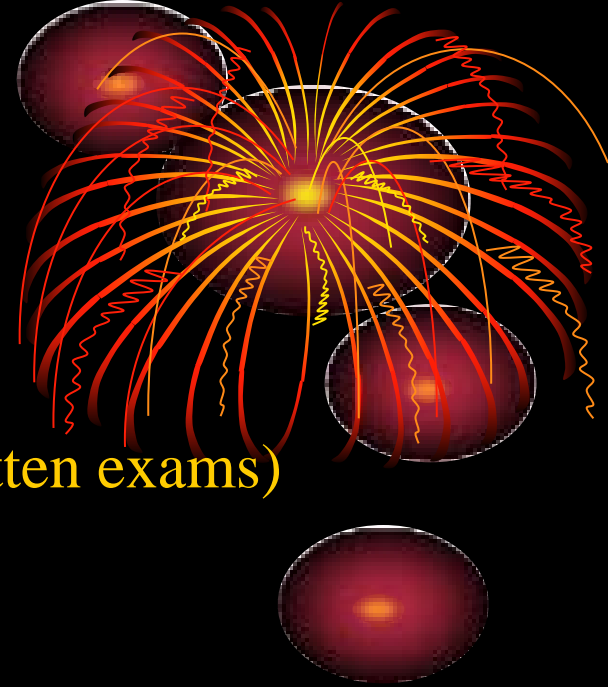
2. Administration

- a. territories divided into prefectures (*xian* [*hsien*]) and circuits (*dao* [*tao*])
- b. *xian* and *dao* into 36 provinces (*qun* [*chün*])
- c. dual system of military (*duwei*) and civilian (*taishou*) governors
- d. formalized civil service system
- e. Wang Anshi (1021–1086) – “Great Reforms”

3. Army



C. Social



1. Scholar-Administrators (civil-service written exams)

2. Farmers

3. Artisans

4. Merchants

This figure depicts the typical clothing of a Tang Dynasty official; tall hat, wide-sleeved outer garment tied at the waist with a wide belt, and rectangular “kerchief” in front. A white inner gown hangs over his square shoes. He solemnly holds a tablet to his chest, preparing to provide a report to his superiors.



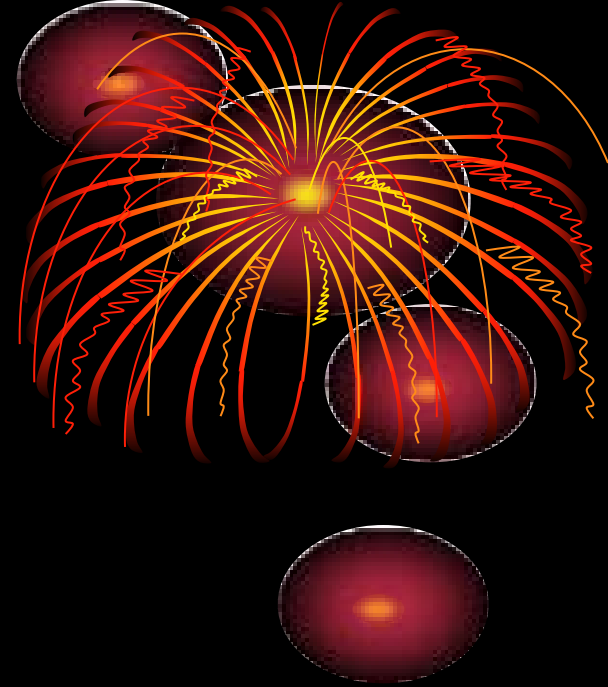
D. Economic



1. based on agriculture (Chen Pu, *The Craft of Farming* [1149])
2. irrigation systems; flood control
3. system of canals and dams begun by Li Bing (ca. 250 BC)
4. salt mines
5. trade (silk, porcelain)

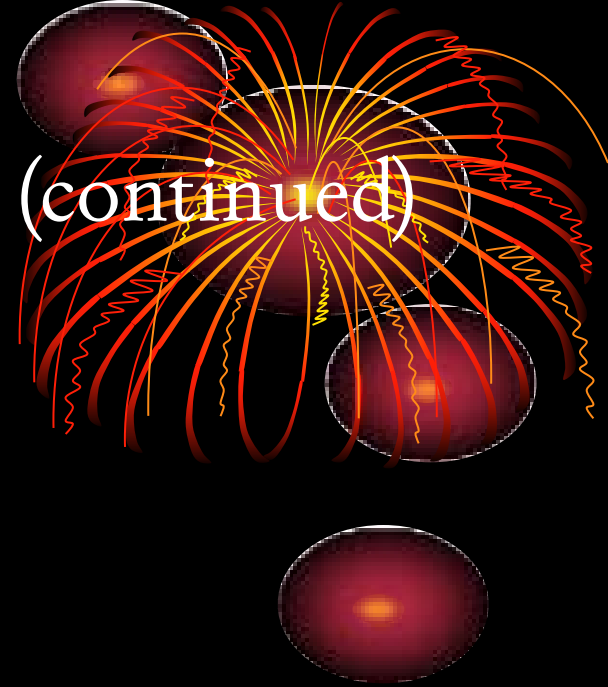
E. Technological Achievements

- Agriculture
- Astronomy and Cartography
- Engineering
- Domestic and Industrial Technology
- Medicine and Health

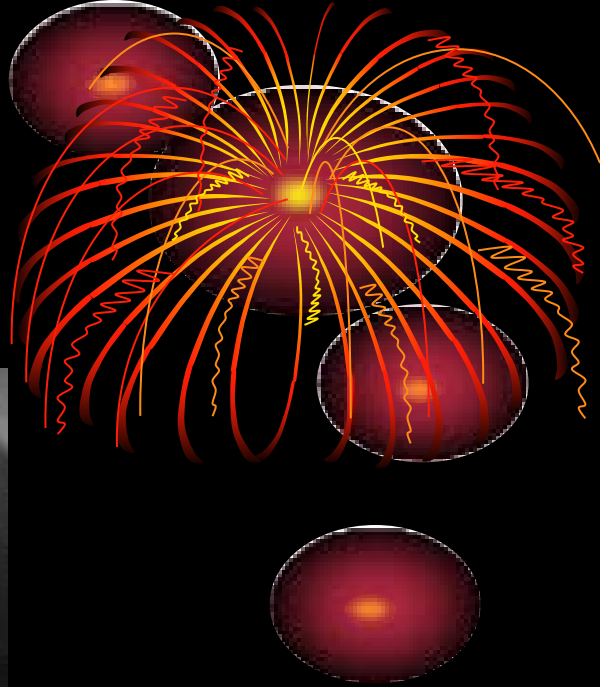


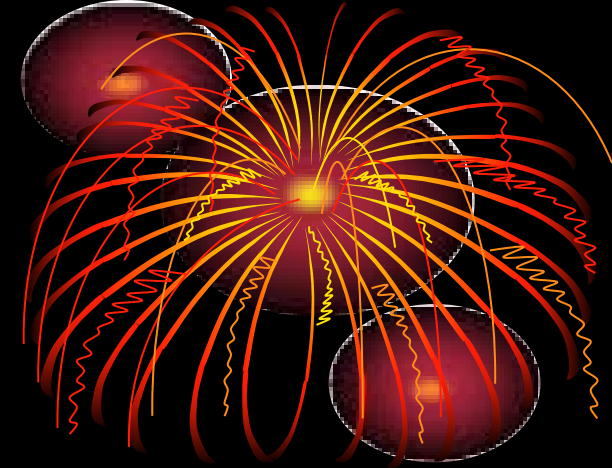
E. Technological Achievements (continued)

- Mathematics
- Magnetism
- Physical Sciences
- Transportation and Exploration
- Sound and Music
- Warfare



Joseph Needham (1900–1995)





Magnum opus:

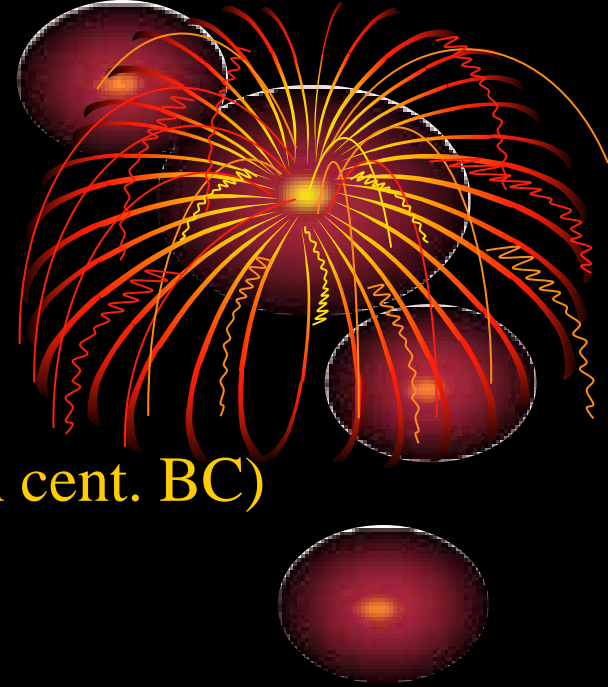
Joseph Needham et al., *Science and Civilisation in China*, 27 volumes (Cambridge University Press, 1954–2008)



Biography:

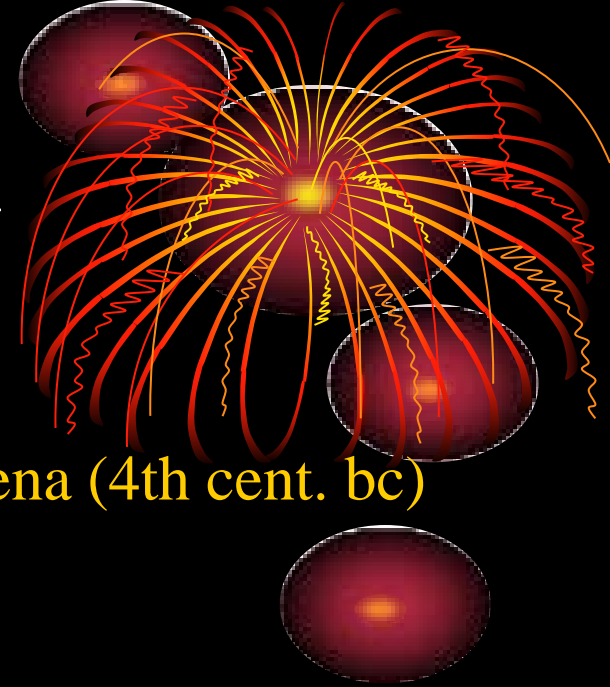
Simon Winchester, *The Man Who Loved China: The Fantastic Story of the Eccentric Scientist Who Unlocked the Mysteries of the Middle Kingdom*. New York: HarperCollins, 2008.

Agriculture



1. Row cultivation and intensive hoeing (6th cent. BC)
2. Iron plow (6th cent. BC)
3. Efficient horse harness (4th and 3rd cents. BC)
4. Rotary winnowing fan (2nd cent. BC)
5. Multi-tube (“modern”) seed drill (2nd cent. BC)

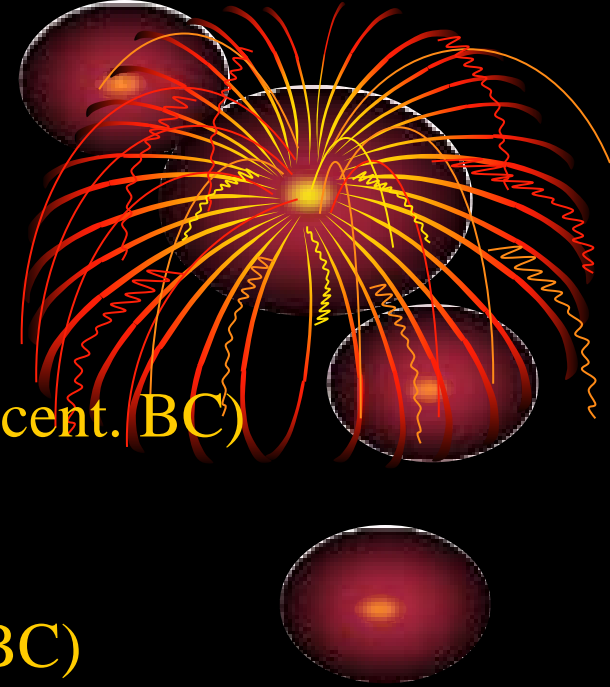
Astronomy and Cartography



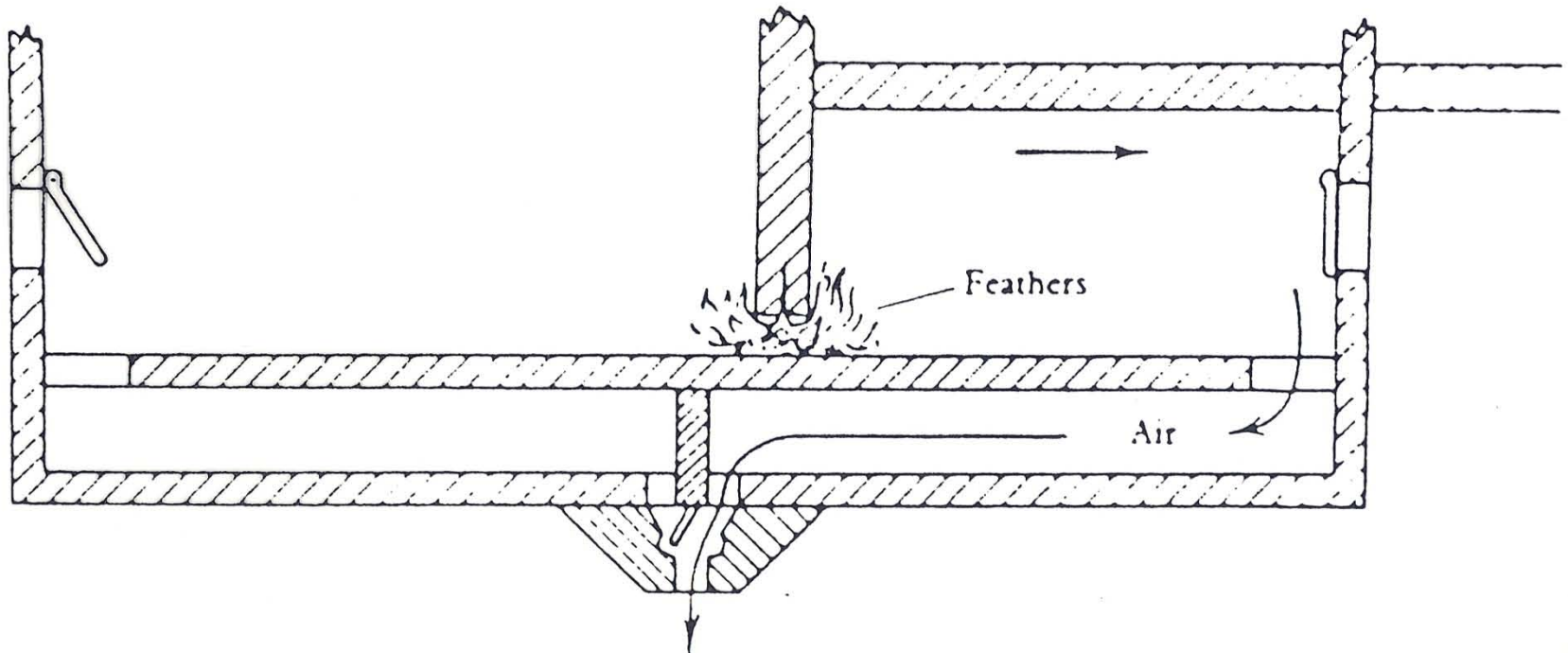
6. Recognition of sunspots as solar phenomena (4th cent. bc)
7. quantitative cartography (2nd cent.)
8. Discovery of the solar wind (6th cent.)
9. Mercator map-projection (10th cent.)
10. Equatorial astronomical instruments (13th cent.)

Engineering

11. Spouting bowls and standing waves (5th cent. BC)
12. Cast iron (4th cent. BC)
13. Double-acting piston bellows (4th cent. BC)
14. Crank handle (2nd cent. BC)
15. “Cardan suspension,” or gimbals (2nd cent. BC)
16. Manufacture of steel from cast iron (2nd cent. BC)
17. Deep drilling for natural gas (1st cent. BC)
18. Belt-drive (or driving belt) (1st cent. BC)
19. Water powered bellows (1st cent.)

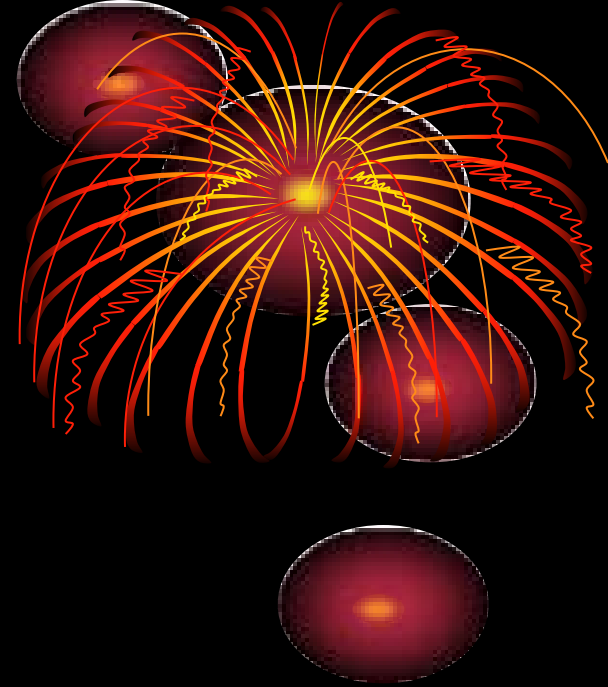


Double-acting piston bellows (4th cent. BC)

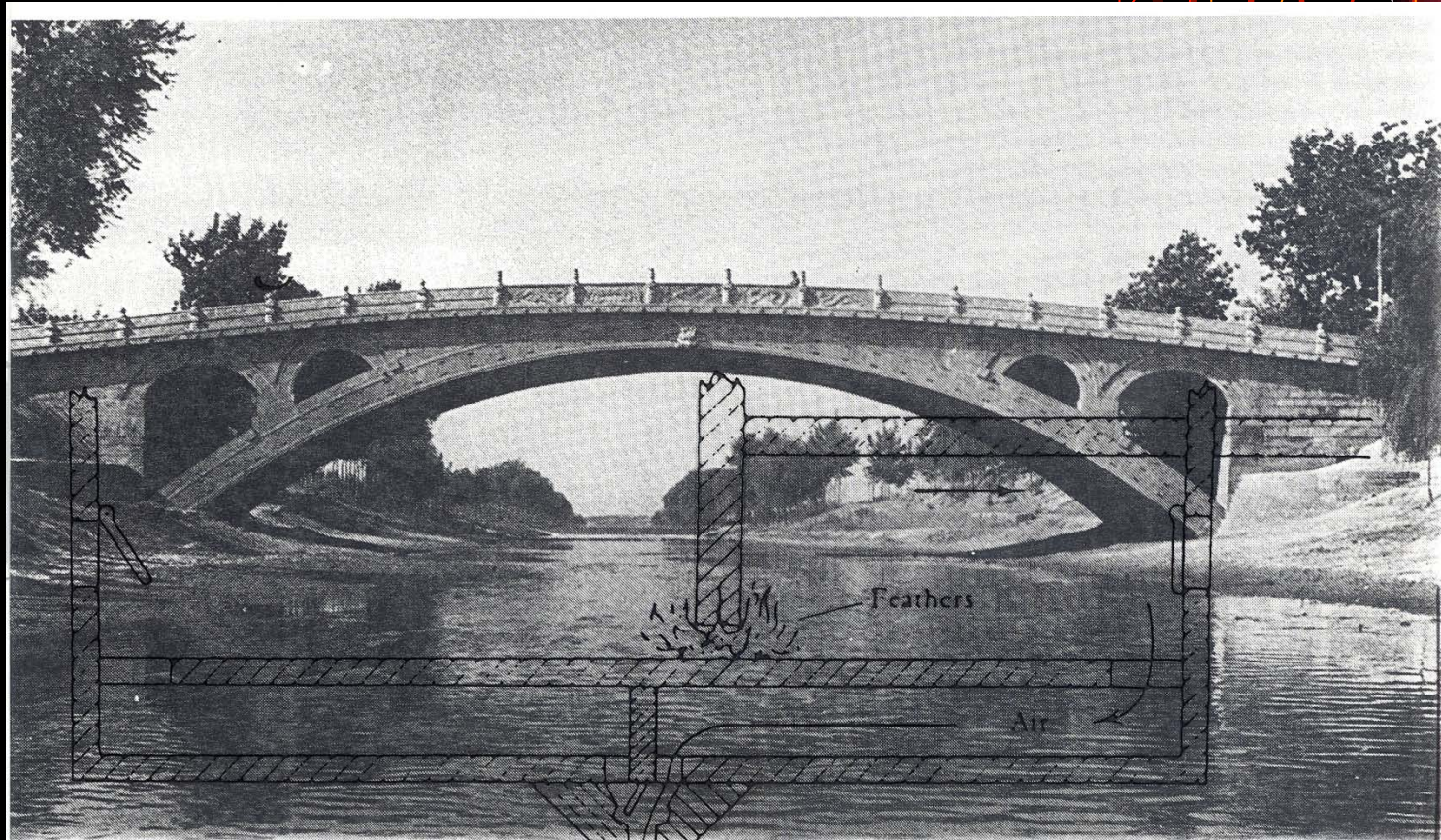


Engineering (continued)

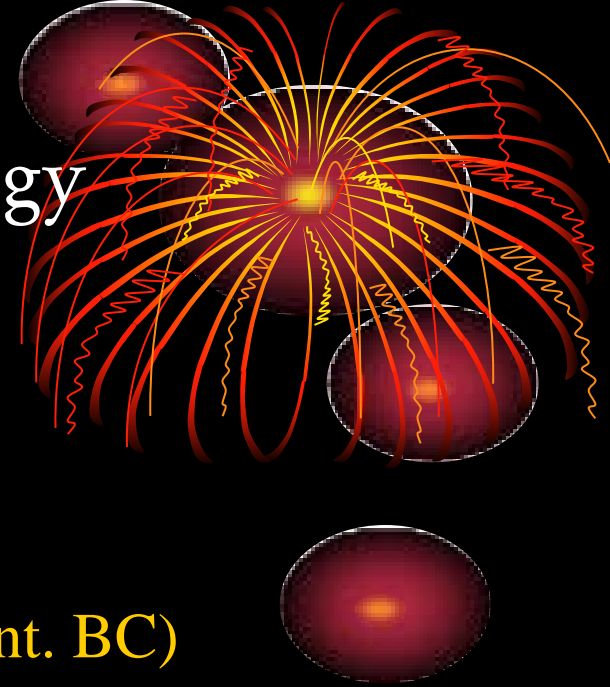
- 20. Chain pump (1st cent.)
- 21. Suspension bridge (1st cent.)
- 22. First cybernetic machine (3rd cent.)
- 23. Essentials of the steam engine (5th cent.)
- 24. “Magic mirrors” (5th cent.)
- 25. “Siemens” steel process (5th cent.)
- 26. Segmental arch bridge (7th cent.)
- 27. Chain-drive (976)
- 28. Underwater salvage operations (11th cent.)



Segmental arch bridge (7th cent.)

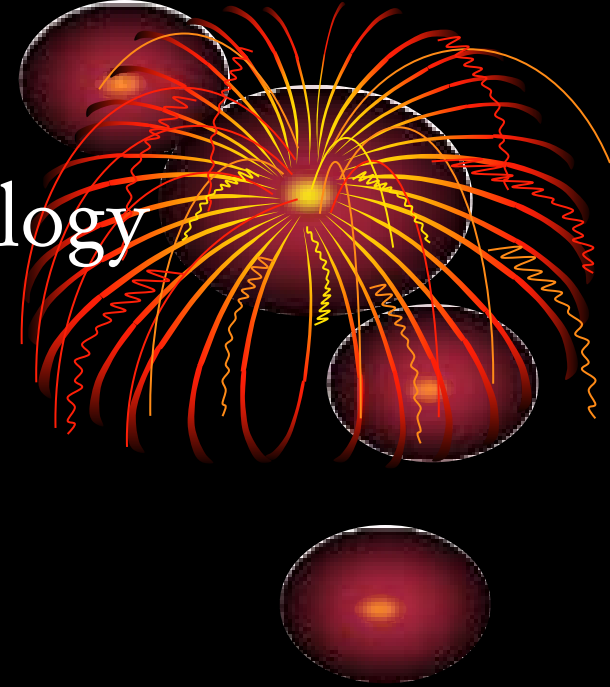


Domestic and Industrial Technology



- 29. Lacquer: the first plastic (13th cent. BC)
- 30. Strong beer (saki) (11th cent. BC)
- 31. Petroleum and natural gas as fuel (4th cent. BC)
- 32. Paper (2nd cent. BC); for writing (AD 105)
- 33. Wheelbarrow (1st cent. BC)
- 34. Sliding calipers (1st cent.)

Domestic and Industrial Technology



35. Magic lantern (2nd cent.)

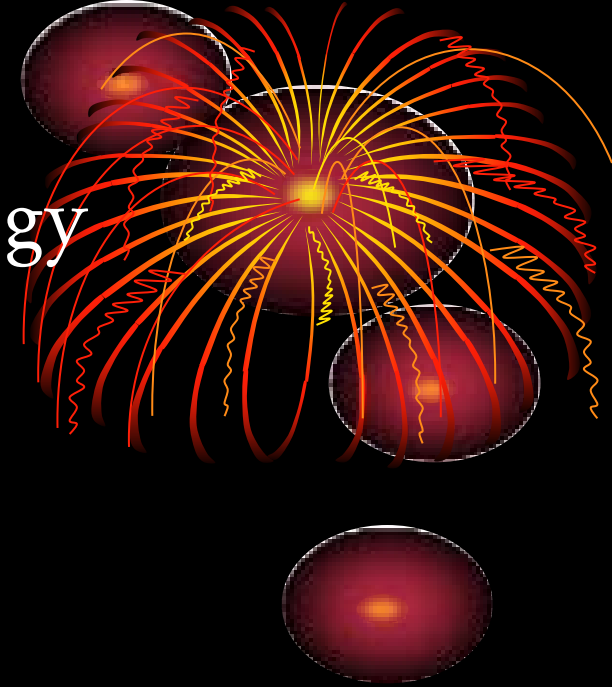
36. Fishing reel (3rd cent.)

37. Stirrup (3rd cent.)

38. Porcelain (3rd cent.)

39. Biological pest control (3rd cent.)

Domestic and Industrial Technology

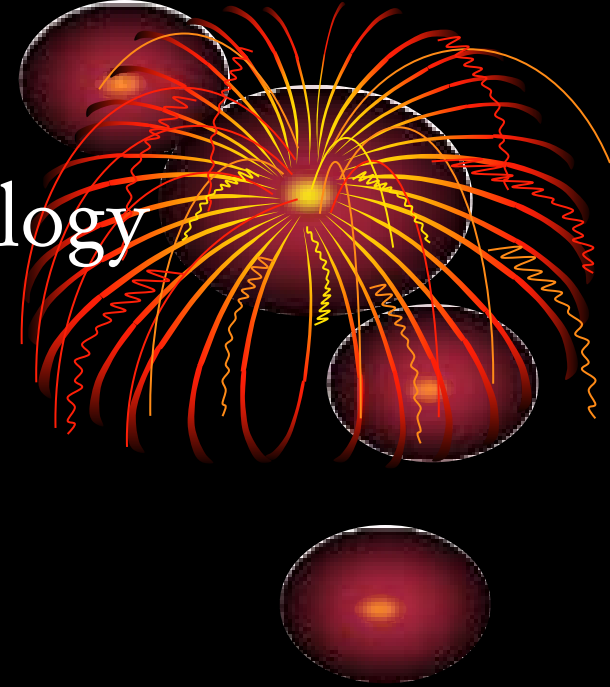


- 40. Umbrella (4th cent.)
- 41. Matches (6th cent.)
- 42. Chess (6th cent.)
- 43. Brandy and whisky (7th cent)
- 44. Mechanical clock (8th cent.)
- 45. Printing (8th and 11th cent.)

Frontispiece, Diamond Sutra from Cave 17, Dunhuang,
ink on paper British Library Or.8210/ P.2, printed in the
9th year of Xiantong Era of the Tang Dynasty, i.e., AD 868



Domestic and Industrial Technology



46. Playing cards (9th cent.)

47. Paper money (9th cent.)

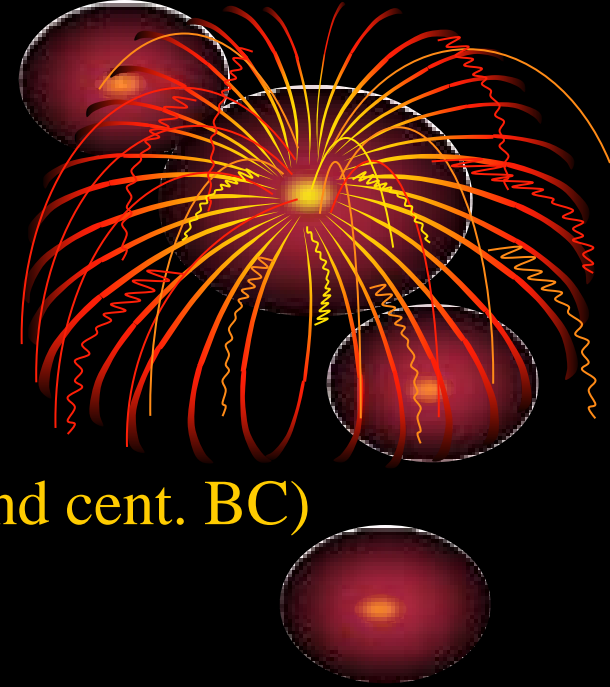
48. “Permanent” lamps (9th cent.)

49. Spinning-wheel (11th cent.)

49a. Abacus

Medicine and Health

- 50. Circulation of the blood (2nd cent. BC)
- 51. Circadian rhythms in the human body (2nd cent. BC)
- 52. Science of endocrinology (2nd cent. BC)
- 53. Deficiency diseases (3rd cent.)
- 54. Diabetes (7th cent.)
- 55. Use of thyroid hormone (7th cent.)
- 56. Immunology (10th cent.)



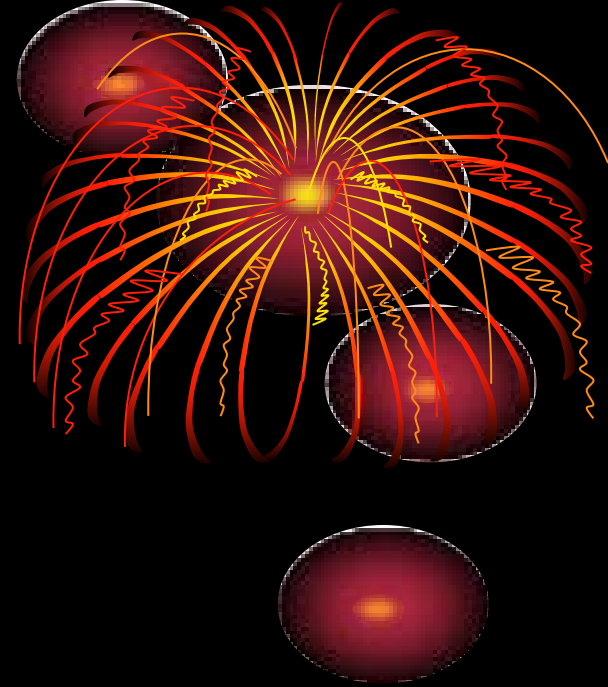
Mathematics

57. Decimal system (14 cent. BC)

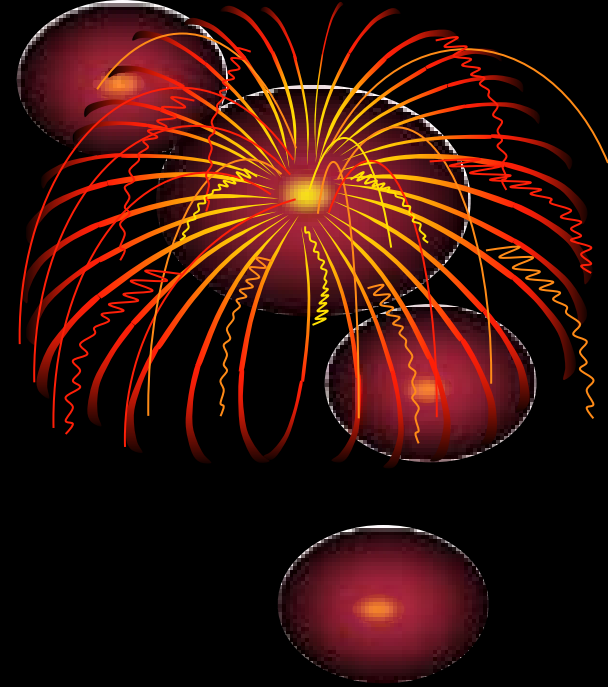
58. A place for zero (4th cent. BC)

59. Negative numbers (2nd cent. BC)

60. Extraction of higher roots and solutions of higher numerical equations (1st cent. BC)



Mathematics (continued)



61. Decimal fractions (1st cent. BC)

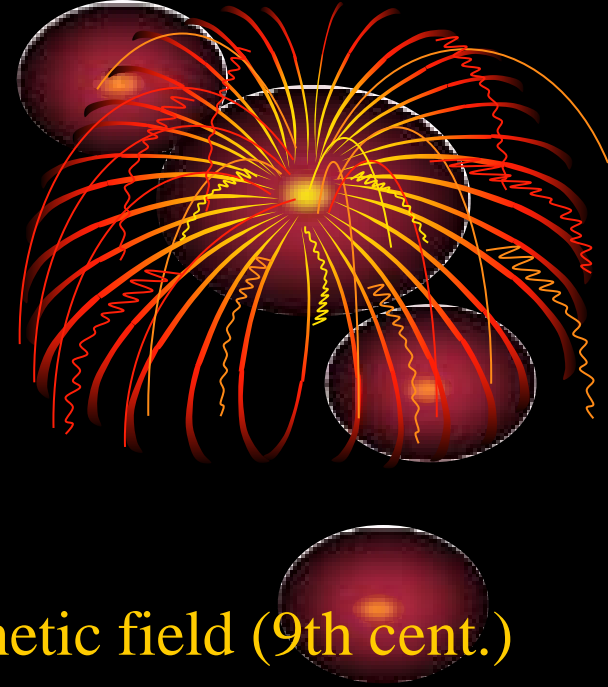
62. Using algebra in geometry (3rd cent.)

63. A refined value of π (3rd cent.)

64. “Pascal’s” triangle (11th cent.)

64a. “Pythagorean Theorem” (4th cent. BC)

Magnetism



65. First compasses (4th cents. bc)

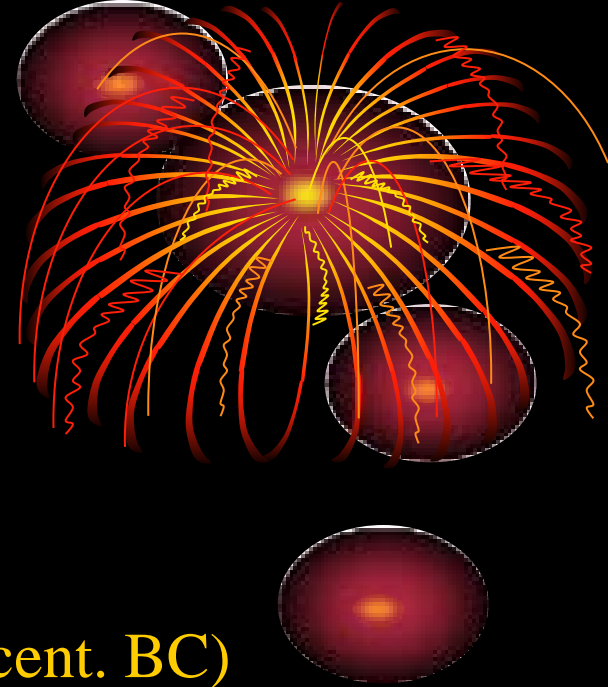
66. Dial and pointer devices (3rd cent.)

67. Magnetic declination of the Earth's magnetic field (9th cent.)

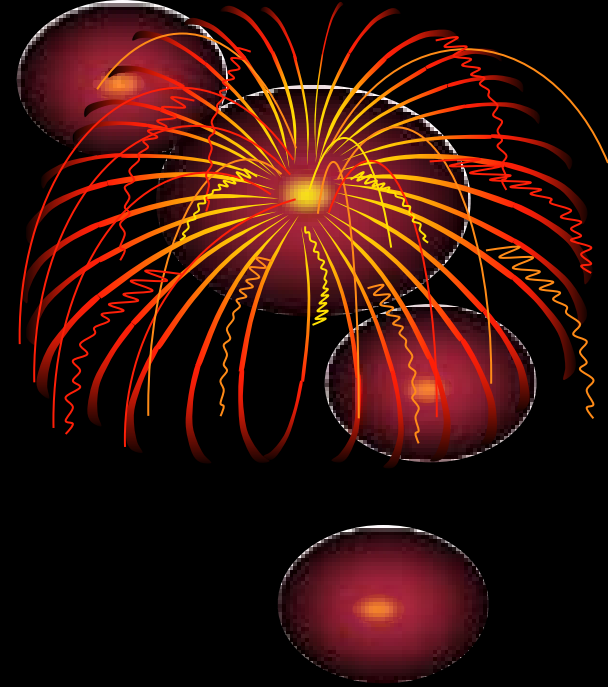
68. Magnetic remanence and induction (11th cent.)

Physical Sciences

- 69. Geobotanical prospecting (5th cent. BC)
- 70. First law of motion (4th cent. BC)
- 71. Hexagonal structure of snowflakes (2nd cent. BC)
- 72. Seismograph (2nd cent.)
- 73. Spontaneous combustion (2nd cent.)
- 74. “Modern” geology (2nd cent.)
- 75. Phosphorescent paint (10th cent.)



Transportation and Exploration



76. Kite (5th/4th cent. BC)

77. Manned flight with kites (4th cent. BC)

78. First relief maps (3rd cent. BC)

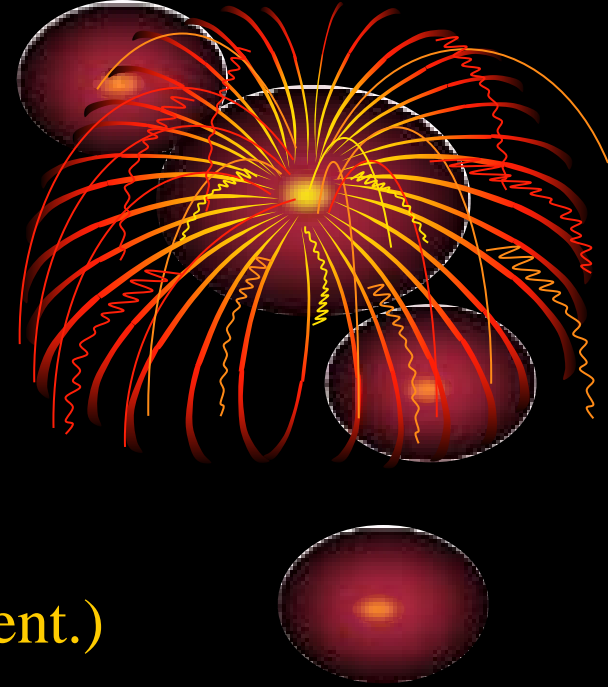
79. First contour transport canal (3rd cent. BC)

80. Parachute (2nd cent. BC)

81. Miniature hot-air balloons (2nd cent. BC)

82. Rudder (1st cent.)

Transportation and Exploration (continued)



83. Masts and sailing (2nd cent.)

84. Watertight compartments in ships (2nd cent.)

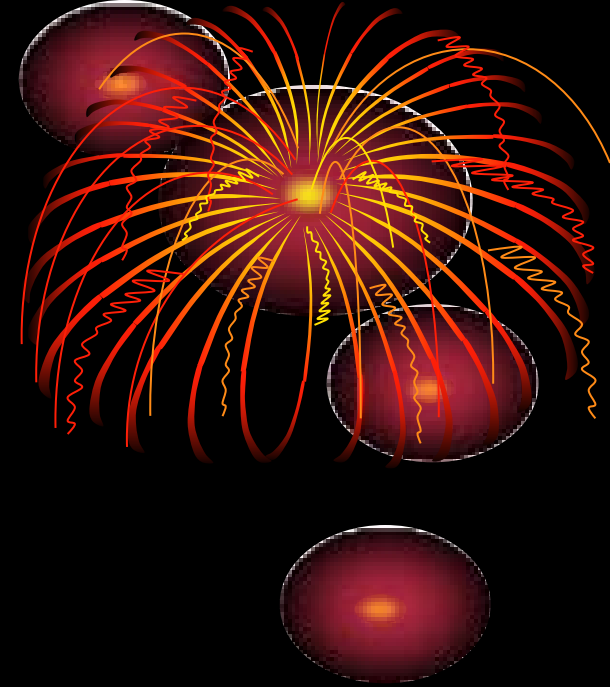
85. Helicopter rotor and the propeller (4th cent.)

86. Paddle-wheel boat (5th cent.)

87. Land sailing (6th cent.)

88. Canal pound-lock (10th cent.)

Sound and Music



89. Large tuned bell (6th cent. BC)

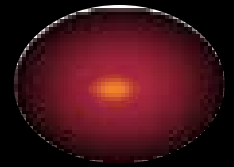
90. Tuned drums (2nd cent. BC)

91. Hermetically sealed research laboratories (1st cent. BC)

92. First understanding of musical timbre (3rd cent.)

93. Equal temperament in music (16th cent.)

The Jingyun Bell, cast in 711. On display at the Xi'an Bell Tower in Xi'an. 247 cm high and 6,500 kg



Warfare



94. Chemical warfare, poison gas, smoke bombs, and tear gas

(4th cent. BC)

95. Crossbow (4th cent. BC)

96. Gunpowder (9th cent.)

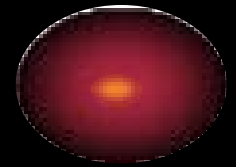
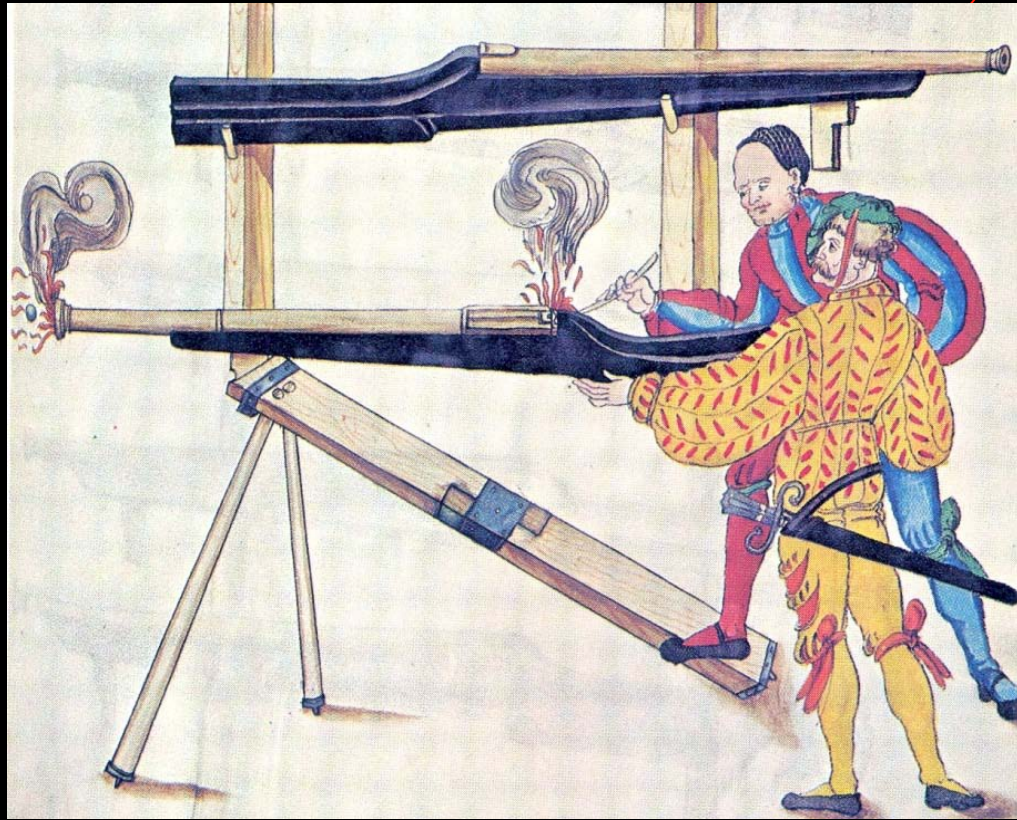
97. Flame-thrower (10th cent.)

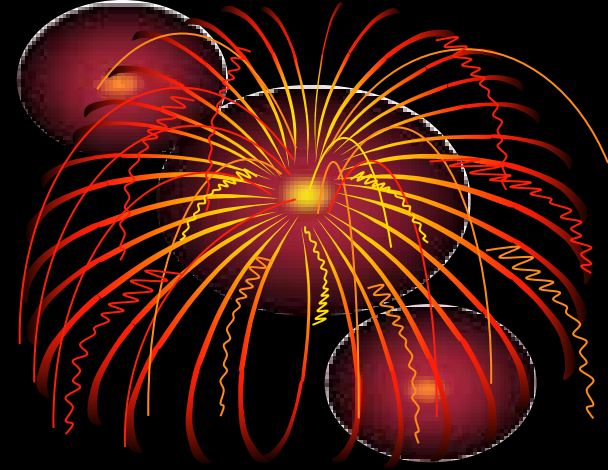
98. Flares, fireworks, bombs, grenades, land mines, and sea
mines (10th cent.)

99. Rocket and multi-stage rockets (11th and 12th cents.)

100. Guns, cannons, mortars, and repeating guns (13th cent.)

Guns, cannons, mortars, and repeating guns (13th cent.)





THE END

