1 SUMMARY OF SCIENCE AND PHILOSOPHY IN THE 14TH AND 15TH CENTURIES

The science, pedagogy and philosophy of Western Europe in the 14th and 15th centuries had to fight for soil and air in a jungle of superstition, intolerance and fear. Amid famines, plagues and wars, in the chaos of a fugitive or divided papacy, men and women sought in occult forces some explanation for the unintelligible miseries of mankind, some magical power to control events, some mystical escape from a harsh reality; and the life of reason moved precariously in a medium of sorcery, portents, prophecies, dream interpretations, fateful stellar conjunctions, chemical transmutation, miraculous cures and occult powers in animals, minerals and plants. All these marvels remain in some degree with us today and one or another wins from almost every one of us some open or secret allegiance; but their present influence in Europe falls far short of their medieval sway. The science of medicine contended at every step with astrology, theology and quackery. Probably through disillusionment with medicine, millions of Christians turned to faith healing. (Ref. 501)

The situation in the Moslem and Far Eastern worlds was not greatly different, with wars and plagues keeping the people busy externally, while religious conflicts and mysticism occupied their inner selves. It is not strange, then, that barring Leonardo da Vinci, one is hard pressed to name famous scientists of this era. And there is no question but what da Vinci was a great scientist as well as an artist. He studied and investigated all areas of physical and biological endeavors. He knew that the sun did not move and that the earth was not the center of the universe. He supplied descriptions and fantastic drawings of the uterus, as well as many of the more accessible bodily organs. He wrote extensive treatises on motion, weight, acoustics, color, hydraulics and magnetics, although he did draw heavily on the preceding works of Jean Buridan and Albert of Saxony of the 14th century. Although there were many schools of astronomy, law and medicine in Italy, the only other memorable names in science were in geography and medicine. Paolo Toscanelli was a great physician and geographer. Amerigo Vespucci, who bequeathed his name to America, made his first voyage to the new world in 1499 and made maps. The chief advancement in medicine came through better anatomy, made possible by the quite general use of dissection of corpses. At the end of the 15th century, even the pope had approved such dissections in all the medical schools in Italy. Medicine had barely reached by 1500, however, the knowledge possessed by Hippocrates, Galen and Soranus up to A.D. 200.

Plastic surgery was revived in Sicily about 1450, using skin grafts to mutilated noses, lips and ears. We have mentioned the great Iraqi physician, Ibn al-Nafis and the advancement of medicine in China, which included the use of chaulmoogra oil for leprosy. The latter disease had almost disappeared from

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11"Bibliography", reference [50] <http://cnx.org/content/m17805/latest/#fivezero>
western Europe, even without specific treatment, but syphilis took its place. It is interesting that the first medical author to be printed with Gutenberg's movable type was Celsus, the Roman of the 1st century C.E., whose work had been re-discovered by Pope Nicholas. (Ref. 125) Credit for the greatest advancements in engineering should probably go to Ming China, with its great irrigation and shipping canals, its advancements in navigation and shipbuilding and related features.

2 "Bibliography", reference [125] <http://cnx.org/content/m17805/latest/#onetwofive>