

ON THE THEORY OF ELEMENTS IN SCIENCE

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AIM

The aim of this work is to present the theory of elements of which is composed the universe in ancient primitive, prehistoric and historic science with reflection always, on ancient medicine in various people.

MATERIAL

The material is various textbooks of History of Medicine, the ancient Greek literature, textbooks of Chemistry and scientific articles.

METHOD

The method is the textual criticism of the relative accessible to us bibliography.

RESULTS

There is the consideration and the acceptance of theory of five elements of yang (active, light, dry, warm, positive) and yin (passive, dark, moist, cold, negative) with ultimate principle the tao (the way) which determines the proportions of yang and yin by ancient Taoist Chinese philosophers with representative the Lao-tzu (6th c. B.C.).

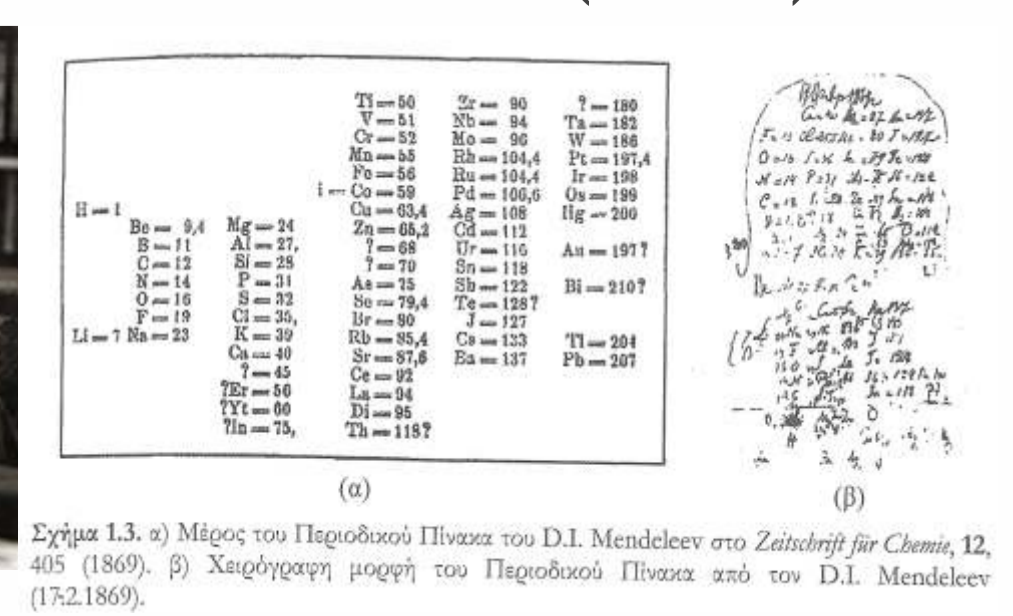
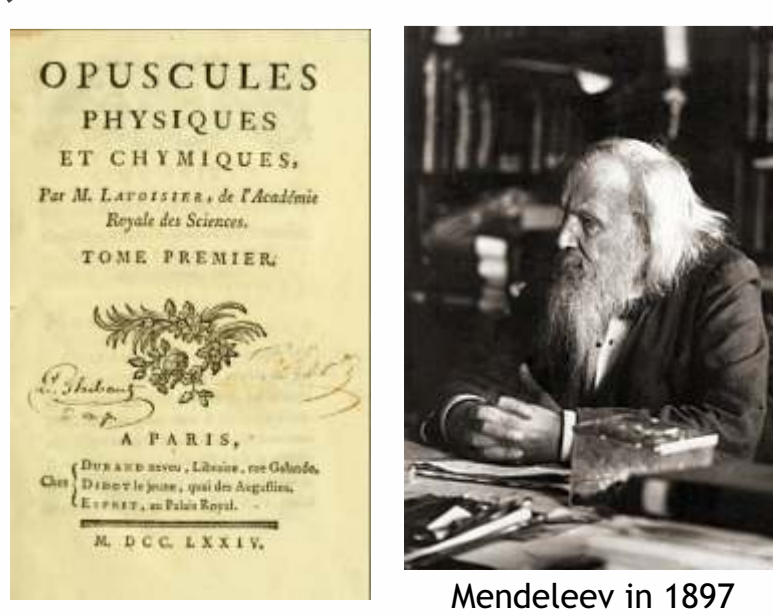
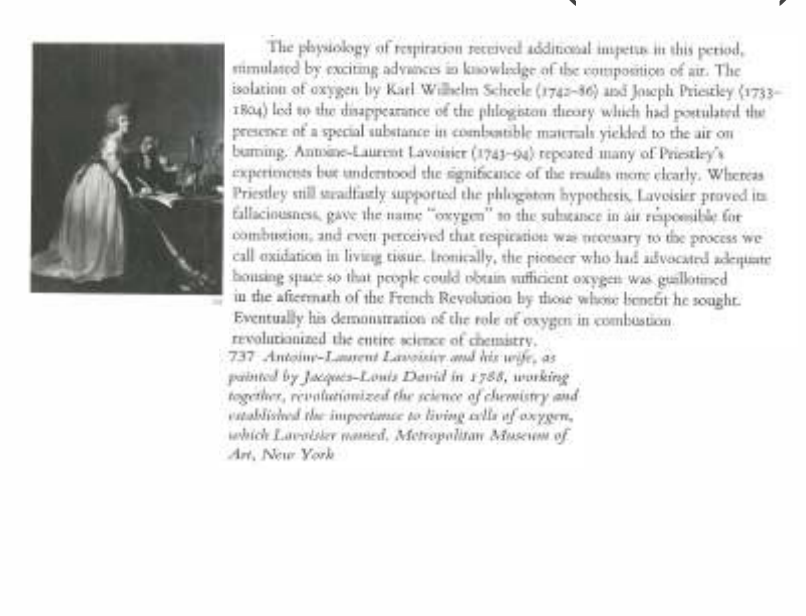
In Mesopotamian medicine was rendered as theory of elements the sun, the water and the sky with stars, by which these last was formed the astrologic medicine.

Philolaus of Croton (5th - 4th c. B.C.) accepts one element, the heat; Polybus (5th - 4th c. B.C.) and Petron of Egina (unknown date) two elements, heat and coldness.

Four elements are reflected to Hippocratic medicine (5th - 3rd c. BC) as heat, coldness, moisture, dryness (Ancient Medicine, I.3) and/or blood, phlegm, yellow bile, black bile (Nature of man, V.1),

The theory of four elements endures until 18th c. CE in some universities of the Europe. During 1200 - 1500 CE grew the Alchemists' theory of three elements (mercury, sulphur, salt) for metals. Paracelsus (16th c. CE) accepted both theories, of four and three elements.

Later, Antoine Laurent Lavoisier 18th c. CE introduced the first periodic table with 33 elements, Dalton 36 elements (1766 - 1844) In 19th c. CE, Berceilius 47 elements (1814), J. Newlands 56 elements (1866), Dmitri Mendeleev 63 elements (1869)



Physiological functions were constructed into a humoral system much like Greek concepts of the sixth century a.c. and Galenic views of the second century A.D., except that there were five instead of four essential humors. (The number five had mystical value for the Chinese and was used for most classifications: five elements, five tastes, five qualities, five kinds of drugs, five treatments, five solid organs, five seasons, five emotions, five colors, etc.) The medical compendium *Nei Ching* stated that each emotion had its seat in a particular organ. Happiness dwelt in the heart, thought in the spleen, sorrow in the lungs, and the liver housed anger as well as the soul.



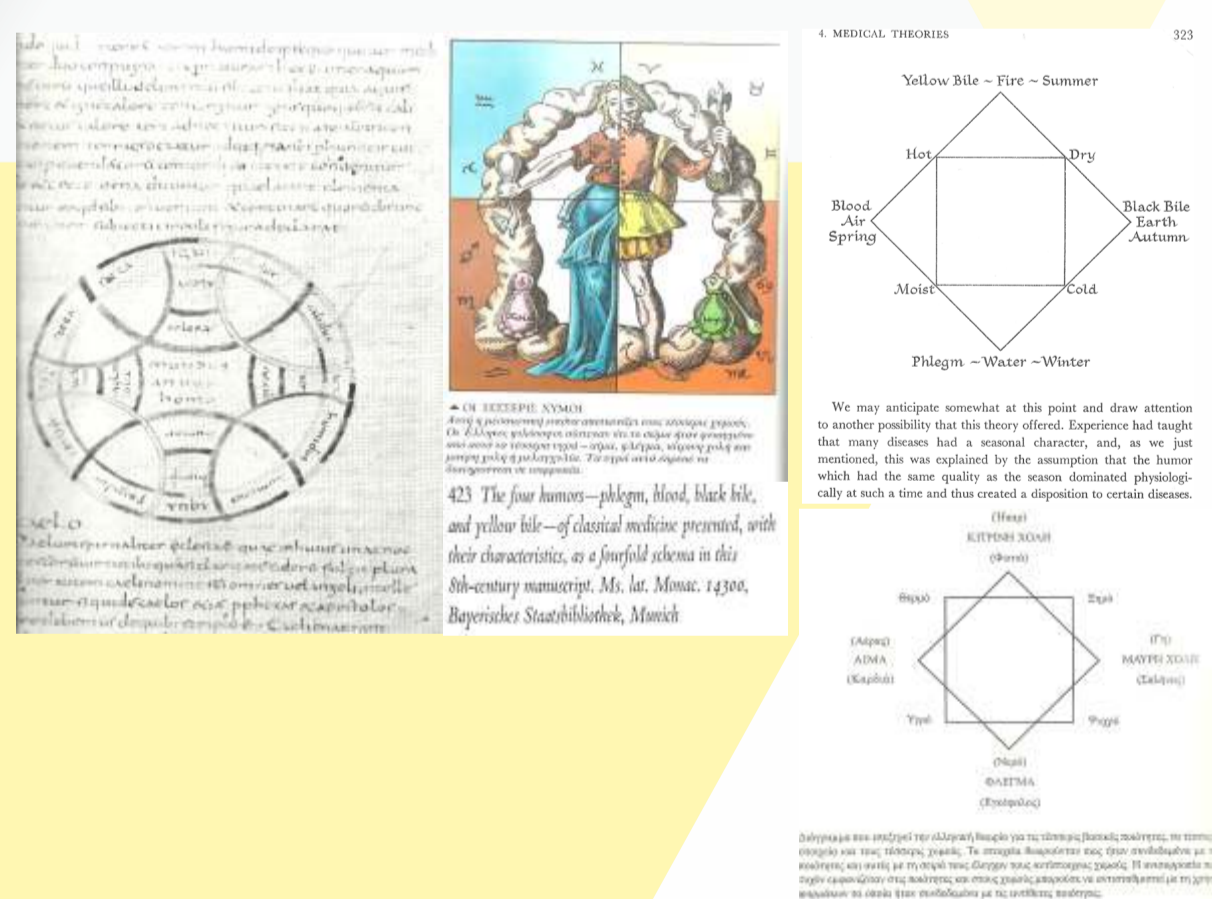
199 Title page of late edition of the Nei Ching by Huang Ti (c. 2600 B.C.), which summarized all the medical knowledge of the period in dialogues between the Yellow Emperor and his prime minister. Courtesy of the Wellcome Trust, London

In ancient Chinese cosmology, the universe was created not by divinities but self-generated from the interplay of nature's basic duality: the active, light, dry, warm, positive, masculine yang and the passive, dark, cold, moist, negative yin. All things, animate and inanimate, and all circumstances were a combination of these fundamentals. The ultimate principle of the universe was the tao, "the way," and it determined the proper proportions of yin and yang in everything. Anything that altered the natural relation of yin to yang was considered bad, and right living consisted of carefully following the tao. If one observed the tao by moderation, equanimity, and morality, as taught in the *Tao-te Ching*, by Lao-tzu (sixth century B.C.), one would be impervious to disease and resistant to the ravages of aging; diverging of the tao led to illness, which was not so much a punishment for sin as the inevitable result of acting contrary to natural law. However, illness also could be caused by forces beyond one's control: "Wind is the cause of a hundred diseases," and atmospheric conditions could upset the harmonious inner balance of the yang and yin. One had to be alert to this possibility and combat its effects as well as modify internal imbalances of the vital forces. Longevity and health were the rewards.



87 Assyrian astrolabe found at Nineveh, 7th century B.C., used to locate celestial bodies in calculating astrological influences on events and treatment. British Museum, London

ὁ δὲ Α[ιγινήτης] Πέτρων συνεστάναι φησὶν τὰ ἡ[μέτερα] σώματα ἐκ δισσοῶν στοιχείων, ψ[υχροῦ] τε καὶ θερμοῦ, ἐφ' ἐτέρωι δὲ τοῦ[των]



Secondly, in ancient Persia (Iran) and ancient India is the theory of "thridosha" that is the theory of three principles, in which food and medication with their "veerya" (general result), "vipaka" (chemical composition) and "guna" (physiologic mechanism) act upon these principles with reflexion to pathology as spirit, bile and phlegm.

Follows the ancient Greek science (5th c. B.C.) starting from Ionia (Asia Minor) and Magna Grecia (Sicily, Calabria, Apulia) and ending in Alexandria. According the primitive Greek physic philosophers there is one element in the universe: Water (Thales, c. 586 BC), air (Anaximenes, c. 546 BC), fire (Heraclitus, c. 504 BC; Hippasus of Metapontum 5th c. BC) and earth - ground (Empedocles, c. 450 BC). The elements water and earth are reduced to Orpheus' theology (prehistory).

54. ΔΑΜΑΣΚ. Περὶ τῶν πρώτων ἀρχῶν 123 (τόμ. α', σελ. 317 15 Ruelle)

Ἡ δὲ κατὰ τὸν Ἰερώνυμον φερομένη καὶ Ἑλλάνικον, εἴπερ μὴ καὶ ὁ αὐτός ἐστιν, οὕτως ἔχει: "Υδὼρ ἦν, φησὶν, ἐξ ἀρχῆς, καὶ ὕλη, ἐξ ἧς ἐπάγη ἡ γῆ", δύο ταύτας ἀρχὰς ὑποτιθέμενος πρῶτον, ὕδωρ καὶ γῆν, ταύτην μὲν ὡς φύσει σκεδασθήν, ἐκείνη δὲ

H. Diels Anonymi Londinensis ex Aristotelis Iatricis Menoniis et aliis medicis Eclogae

supported by Galen and all Greek, Roman and Arab speaking physicians until 16th c. CE. According Aristotle (4th c. BC), Pythagoreans and Alcmaeon of Croton (6th - 5th c. BC) hold that there are ten elements in a series of pairs: limited/unlimited, odd/even, unity/plurality, right/left, male/female, rest/motion, straight/crooked, light/darkness, good/evil, square/oblong (Metaphysics, I. V. 6 or Aristotle 986a, 20 - 30).

Others^b of this same school hold that there are ten principles, which they enunciate in a series of corresponding pairs: (i.) Limit and the Unlimited; (ii.) Odd and Even; (iii.) Unity and Plurality; (iv.) Right and Left; (v.) Male and Female; (vi.) Rest and Motion; (vii.) Straight and Crooked; (viii.) Light and Darkness; (ix.) Good and Evil; (x.) Square and Oblong. Apparently Alcmaeon of Croton speculated along the same lines, and either he derived the

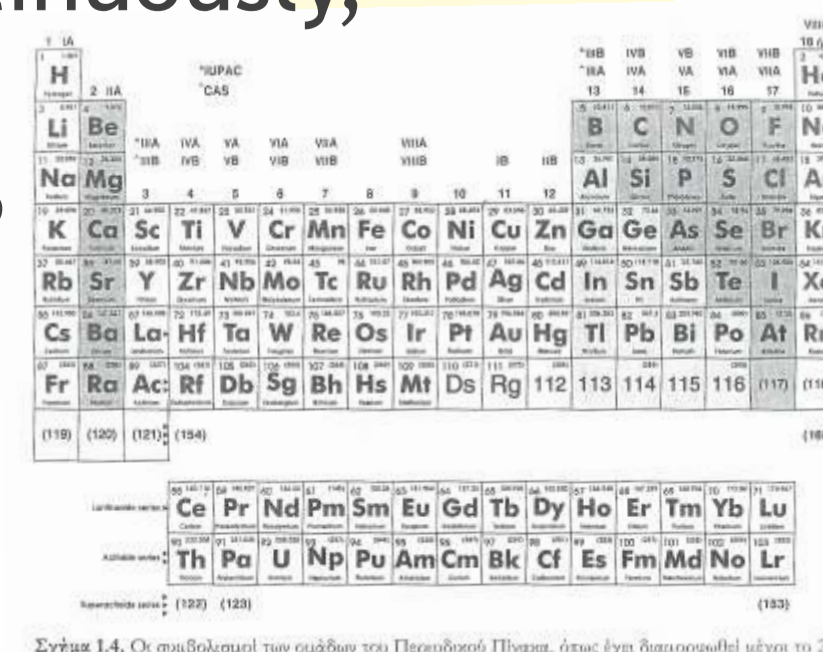
Follows the Flogistonistes' theory with three elements, air, water, earth, one of them named "flogiston", i.e. combustible (George Ernst Stahl, 1660 - 1734).

Of special interest to eighteenth-century medical theorists was the celebrated philosopher Gottfried Wilhelm Leibniz (1646-1716). His basic tenets of logic, natural law, and a vital force governing the body were to find their way into many of the medical systems which came into vogue during the early years of the century. Of these, one of the most influential was that of George Ernst Stahl (1660-1734), who rejected the view of Descartes that the body was simply a machine. Instead, Stahl's theory of vitalism postulated the existence of an "anima" or sensitive soul which regulates the body health in a manner not unlike that of the "physis" of Hippocrates or the "psyche" of Aristotle. Disdainful of anatomy and physiology, Stahl was a strong advocate of bloodletting and other methods aimed at reducing "plethora." His support of the phlogiston theory of combustion may have delayed the discovery of oxygen by several decades.



720 Portrait of Dr. Georg Ernst Stahl, who taught that a life force, anima, controlled health, that fever was an agent of anima to combat disease, and that bleeding and purging were beneficial. New York Academy of Medicine

and finally Moseley (1913) gave the final form of the periodic table, which enriched continuously, having in nowadays 118 elements, of which 98 natural and 20 artificial.



CONCLUSION

In conclusion, the theory of the elements starting from ancient era, was proved and enriched by the time, offering many benefits on science and human kind and keeping always in mind that element, according R. Boyle (1627 - 1691), is the limit of chemical analysis of a substance.

