

“Wise Caldas” an unrecognized pioneer of epidemiological thinking

“El sabio Caldas” un pionero no reconocido del pensamiento epidemiológico

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Francisco José de Caldas was born in Popayán in 1768 (250 years ago), and was executed in 1816 in Bogotá, Colombia, after having been a military engineer in the Creole army, which fought the war of independence against Spain. He studied in the San Francisco de Asís Royal Seminary College in his city of origin, and at the Higher College of Our Lady of the Rosary in the Colombian capital. He was a learned man with ample knowledge in biology, geography and astronomy, and the inventor of one of the first hypsometers (instruments to measure height above sea level based on the boiling point of water). Because of his ample knowledge in various sciences, he was known as “the wise man”¹.

The manuscript presented above is a segment of a speech published in volumes 29 and 30 of the New Kingdom of Granada Seminary (Semanario del Nuevo Reino de Granada)^{2,3}, a scientific publication that he directed, and whose audience was a small elite of New Granadian scientists and academics. In it, he described the distribution of the goitre endemic in the regions along the principal rivers in Colombia -- the Magdalena and the Cauca -- and its eugenic implications. He recognized certain observations made by José Celestino Mutis (1732-1808) with regard to the different occurrences of goitre in the two riverside regions; he described the identification of sulphurized water in zones with low occurrence and proposed a change in the source of water consumption to prevent the disease.

Caldas never studied outside Colombia, but his writings reveal the influence of George Louis Leclerc Comte de Buffon (1707-1788). To this leading French naturalist and biologist very cold or hot climate is harmful for thought and civilization. For this reason, Americans were considered degenerate people exposed to wild animals and dangerous forests^{4,5}. Other eighteenth century Europeans who expressed similar ideas included the neo-Hippocratic and eugenically inclined Johann Peter Frank (1745-1821), author of ‘A System of Complete Medical Police’. However, Caldas was not physician and his approach to endemic goitre was based on natural sciences, in similar way to Alexander von Humboldt’s (1769-1859) observations.

Caldas’ document is important to epidemiology and public health in that it shows: 1) observation as an empirical tool, 2) the use of the method of differences as a basis for exploring the causes of a disease, 3) the need to use empirical data to validate an initial hypothesis of causality, and 4) the pragmatism of suggesting the use of incomplete causal knowledge to control a disease⁶. Caldas’ text reflects the early inclusion of these elements of scientific thinking

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for understanding the origin of diseases. That this Latin American scientist is unknown by the world may be due to the differences existing between the science of regional centers and that of the periphery. Nevertheless, it is interesting to remember that interest in studying the causes of endemic goitre was behind conducting the first formal epidemiological studies in Colombia during the second half of the 20th century⁷, in which sulphur-bearing organic compounds were identified as causes of endemic goitre that cannot be controlled with continual iodine supplementation⁸.

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