

Historical note**On the centenary of the term “hormone”**

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In June of 2005 the term *hormone* completed a life span of one century. The word that Ernest Henry Starling included in one of his four lectures to the Royal Society of Physicians of London, given in June 1905, definitively established the permanent representation in terminology for the products secreted by the endocrine glands. Various attempts by physicians and medical writers to replace the term *hormone* by others such as *chalone* (Sir Albert Schaefer), *autacoids* (W.R. Wardle), *harmozones* (Eugene Gley)¹, have failed and have more or less been forgotten, none of these terms having been adopted universally².

E.H. STARLING AND THE TERM “HORMONE”

Ernest Henry Starling (1866-1927) was appointed to the Chair of Physiology at University College of London (UCL) in 1899, a post he held until 1923. It is no exaggeration to say that in 1828 a “dynasty” in Physiology was established at UCL comprising such personalities as Charles Bell (first Professor of Physiology), William Sharpey, John Burdon Sanderson (who had the honour of collaborating with

William Osler when the latter spent 18 months in England), William Bayliss and Edward Scafer³.

Starling (Figure 1) in 1898 had just been elected to the Royal Society for his work on the formation of the lymph. He demonstrated that the outward hydrostatic forces in the capillary were opposed by inward osmotic forces brought about by plasma proteins (Starling’s Principle)⁴. He was the first to introduce the concept of oncotic pressure and to appreciate the counterbalancing of hydrostatic and oncotic pressure on transcapillary fluid exchange. In collaboration with his brother-in-law, William Bayliss, he investigated the innervation and movements of the small intestine and made the first significant descriptions of peristalsis⁴. Starling also studied the nature of secretin, an internal secretion deriving from the mucous membrane of the intestine and not from a secreting gland. In 1904 the term *endocrinology* was used for the first time by Maurice-Adolphe Limon, produced from the Greek words ἐνδον (=within) + κρῖνειν > εἰς κρῖνειν (=sift) + λόγος (=speech) denoting -logy=a subject of study⁵.

Presumably because of the discovery of secretin, Starling was asked to give the Croonian Lecture to the Royal Society. He delivered four lectures in which he reviewed the whole endocrinological scene including a good deal of his own work. The four oral presentations were published in “The Lancet” on August 5th, 12th, 19th and 26th respectively, under the general title “The chemical correlation of the functions of the body”.

In the first lecture (Figure 2) he states the fol-

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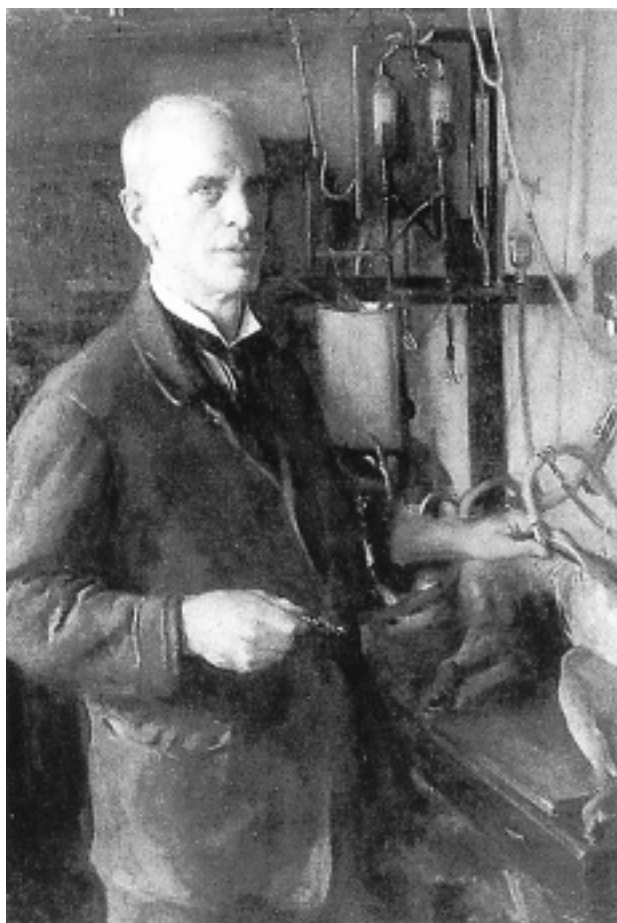


Figure 1. E.H. Starling (1866-1927), the great physiologist.

lowing: “These chemical messengers, however, or <hormones> (from ορμάω=I excite or arouse), as we might call them, have to be carried from the organ where they are produced to the organ which they affect by means of the blood stream and the continually recurring physiological needs of the organism must determine their repeated production and circulation through the body”⁶. He does not use the term hormones in lectures II and III^{7,8} and repeats it only in the fourth lecture, not merely once but 17 times⁹.

An interesting story concerning the genesis of the term *hormone* was narrated by the distinguished Cambridge biochemist Joseph Needham in his book *Order and Life* (1936). Starling was invited to dinner at Caius College Cambridge by the eminent biologist W.B. Hardy. During their conversation both decided that they needed a word for an agent re-

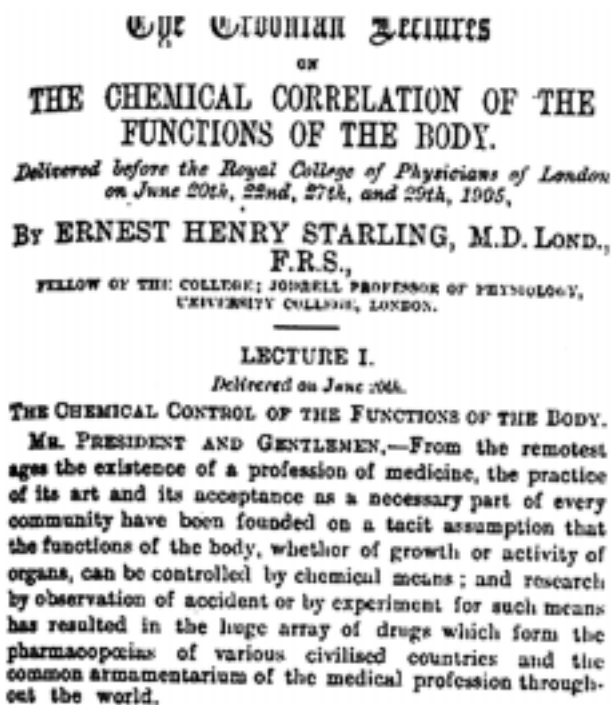


Figure 2. In Introduction to Starling's lecture, given on June 20 1905⁶, and published in “The Lancet”.

leased into the blood stream that stimulated activity in a different part of the body. They asked help of their colleague W.T. Vesey, an authority on Greek classical studies and especially on the work of the ancient poet Pindar, who frequently used the Greek verb ορμάω, denoting “excite” or “arouse”, and Starling conserved the term in his note-book and in his mind until his first lecture. The author does not give the exact date of this historical dinner, thus the time between it and the first appearance of the word *hormone* remains unknown. It is probable that Needham was present at the dinner or that the story was told to him by another who heard it himself⁴.

It is noteworthy that John Smith of Brasenose College at Oxford had used the word *hormetic* 250 years before, in 1666, in the phrase “the hormetic power and contraction of the muscles”. The verb “ορμάω” was used in the “Hippocratic Collection” with the same meaning (=to rush, to set in motion)¹⁰. For example, in the famous Hippocratic Treatise “Sacred Disease” it is mentioned that the corruption of the brane is caused by the phlegm and the bile ... when they rush (ὅταν ορμήσουσιν) to the brain

from the rest of the body by way of the veins¹⁰.

CONCLUSION

The Greek term *hormone* was first used in medical terminology in a series of articles by the famous physiologist Ernest Henry Starling published in “The Lancet” (1905). The 100th anniversary of the term *hormone* reveals that his contribution by way of the coining of the term *hormone* is of no less importance than his enormous medical contribution to human physiology.

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