GRAHAM LUSK

And His Contributions to the Science of Nutrition

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"If there be any one book having a wider penetrating influence on medical research in this country than Lusk's on the science of nutrition I do not know it. If there be, to date, by the pen of any other man in any language, a better discussion of the whole scope of the science of nutrition, I have not seen it." This statement of Professor A. J. Carlson in regard to "The Elements of the Science of Nutrition," by Graham Lusk, was among the many tributes to his stature as a scientist.

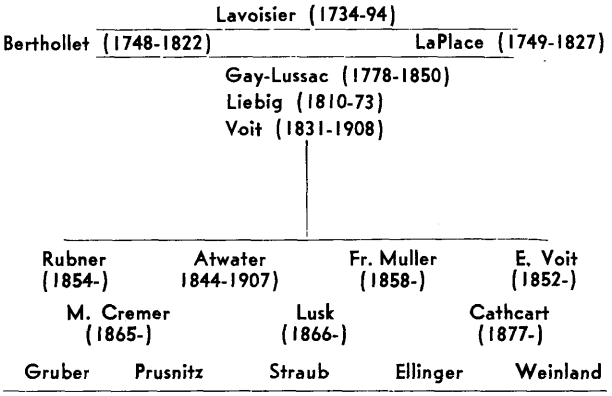
Lusk, who lived from 1866 to 1932, published over 150 scientific papers and either wrote or contributed to 12 scientific books. The most important of them was the text named above, which went through four editions. He thus exerted a great influence upon scientific thinking and on the development of a new phase of physiology in the United States, in the Western hemisphere and in the entire world. This phase of physiology concerned itself with nutrition and has developed into the science of metabolism.

Lusk came from superior stock. His ancestors were early settlers in New England and remained in Connecticut for many generations. His father was a practitioner of medicine who recognized the value of a sound scientific training, having studied chemistry and physiology in Europe for several years before entering the practice of medicine. He was noted particularly in the field of obstetrics; but always kept his physiologic training as the basis for his many scientific papers and books, his practice and his teaching, first at Long Island College, later as a lecturer at Harvard, and as professor of obstetrics at Bellevue Hospital Medical College.

Graham Lusk was born in Bridgeport, Connecticut on February 15, 1866 and shortly thereafter the family moved to New York for permanent residence. Lusk, stimulated by his father's keen scientific approach, devoted himself to a scientific career. When he was sixteen, he spent a year traveling in Europe, after which he studied chemistry at the School of Mines at Columbia University, from which he received a degree in 1887. On account of an increasing deafness, his father persuaded him to give up the idea of the practice of medicine and he went abroad intending to study chemistry and physiology under Hoppe-Seyler. In Munich he visited a friend of his father who gave him a note of introduction to Carl von Voit. Voit's influence on Lusk was a powerful one and changed the entire pattern of his life. He worked with Voit for several years and received a Ph.D. from Munich in 1891. His work in Voit's laboratory, starting with a problem on diabetes, initiated a long series of intensive studies on nitrogen equilibrium, calorimetry, the D-N ratio, and the fate of amino acids in the body.

Lusk dedicated his famous book "To the memory of Carl von Voit, master and friend, from whom the author received the inspiration of his life's work. . . ." In the following interesting chart, he also showed his indirect obligation to Voit's predecessors.

SCIENTIFIC DESCENT OF THE VOIT SCHOOL



On his return to this country, he was appointed instructor in physiology at Yale and in 1895 he was made professor. In 1898, he accepted the chair of physiology at New York University and Bellevue Medical

College. He remained there until 1909 when he became professor of physiology at Cornell University Medical College in New York City, a post which he held until a few days before his death on July 18, 1932.

At Yale, Lusk began his work on phlorizin diabetes, which led to a prolonged investigation of the sources of glucose in the body. When he came to New York, he had the opportunity of extending his observations to the metabolism in human diabetes. In both conditions, he found a definite ratio between the dextrose formed in the organism and the protein metabolized as represented by the nitrogen excretion. By means of this D-N ratio he studied various amino acids as sources of carbohydrate.

In 1912, he became the scientific director of the Russell Sage Institute of Pathology. A respiration calorimeter for human subjects was contructed near the medical wards of Bellevue Hospital and during the course of the next twenty years, he was able to plan experiments on dogs and supplement them by means of observations on human subjects. These very intricate and prolonged experiments were the basis for all of the calculations on the extensive work on severe diabetes that was being carried out throughout the country before the discovery of insulin. To him and his group goes the credit for laying the background for the fundamental metabolic changes occurring in diabetes; and it is fair to say that the improvement in the understanding of the metabolic changes in diabetes since the discovery of insulin could not have taken place without such fundamental work as was done by Doctor Lusk.

Perhaps the chief service of Graham Lusk was his constant readiness to help younger men. There were hundreds of them who went to him with their problems, and they always received his aid and inspiration. Not only the men who worked in his own laboratory, but those from far distant parts of this country and Europe are indebted to him for much of the best parts of their publications.

Scientific meetings were always a particular source of his pleasure and he played an important part in such gatherings. The original idea for The Harvey Society arose in the mind of Graham Lusk and received the immediate support of others. The first meeting was held in Doctor Lusk's home, in the same room where The Society for Experimental Biology and Medicine was founded by him two years previously. He was an active or honorary member of physiological and scientific societies in many countries and during the First World War he served on The Inter-Allied Scientific Food Commission, as one of the representatives of this country.

Following a report on American medical education in the first decade of this century by Dr. Abraham Flexner, Doctor Lusk recognized that the methods of science must be applied in the clinic, as well as elsewhere in the medical school, if medicine was to advance. He quickly enlarged his facilities for physiological investigation at Cornell University Medical School and increased the opportunities for these investigations to be applied to clinical medicine. He enlisted the cooperation of his clinical colleagues in research on metabolism of sick persons and gave opportunity to many clinicians to participate in these investigations. The men who worked in this early period included Howland, DuBois, Aub, Peters, McCann, Barr, Richardson, among many others. Everlasting credit should be given to him for improving the quality of preclinical training in the medical schools.

As a person he had a great cheerfulness, a keen sense of humor and a genius for friendship. He was a most gracious host in his home, which became the mecca of visiting scientists, and on one occasion he entertained the entire International Physiological Congress. In spite of his deafness, he was a good conversationalist and an effective public speaker. He was a tireless worker and had a retentive memory. A staunch friend, he had no patience with insincerity.

Lusk was one of the great figures in American medicine contributing to and developing a new science, making great strides in the improvement of medical education, assisting in the development of young scientists, and fighting always for the good of the scientific world.

Among many famous students, he has left one who has been able to carry on his activities and do much for the perpetuation and further development of the work in which he pioneered. That one is Professor Eugene F. DuBois. His many scholarly and intimate papers on Graham Lusk have been the inspiration and the source of the material here presented. The writer gratefully acknowledges his debt to Doctor DuBois.

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