Thomas Burr Osborne Biography

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Biography

Osborne, the son of a banker, was born in New Haven, Connecticut, and did both his undergraduate and graduate work at Yale University. After getting his Ph.D. in 1885, he joined the recently-established Connecticut Agricultural Experiment Station as an analytical chemist. Four years later, at the suggestion of the station's director, Osborne began an investigation into the proteins of plant seeds--an investigation which eventually became his lifelong work.

The young chemist began by studying oat kernels, in time managing to isolate an alcohol-soluble protein and a globulin from them. Intrigued, he turned to other seeds and, over the next three years, isolated the proteins of at least 32 different plant species, including nuts, legumes, and cereal grains. Subjecting them to an intensive chemical analysis, he found, to his surprise, that the proteins of different species were distinctly different from each other. The differences were especially marked, he noted, in the amino acid content of the various proteins. Although findings like these contradicted the well-known (and widely accepted) doctrine of Justus von Liebig--that only four kinds of protein existed in nature, albumin, casein, fibrin and gelatin, and that they were all pretty much alike--Osborne became increasingly convinced he was on the right track.

In 1909, Osborne invited another biochemist, Lafayette B. Mendel (1872-1935), then working at his alma mater, Yale, to join him in his ongoing investigations, now directed toward probing into nutritional properties of plant proteins. Mendel accepted and the two biochemists proceeded to work together for almost twenty more years. They co-wrote roughly a hundred papers and made a number of important discoveries. For example, they found that two amino acids in particular, lysine and tryptophan, were essential for the normal growth of animals. Furthermore, laboratory rats were unable to manufacture these substances within their bodies and thus had to rely on dietary lysine and tryptophan to survive.

The outstanding accomplishment of the Osborne and Mendel collaborations was made in 1913 with the discovery of the substance that later proved to be vitamin A. In that year, the two researchers determined that butter contains a fat-soluble essential nutrient (a nutrient they also found in cod-liver oil). Unfortunately, they published their results three weeks after Elmer McCollum had announced his discovery of the same substance. McCollum, therefore, received most of the credit for the discovery.