Johann Heinrich Wilhelm Geissler Biography

Johann Heinrich Wilhelm Geissler

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Contents

Johann Heinrich Wilhelm Geissler Biography.....1

Contents.....2

Biography.....3

Biography

Geissler was born into a family of craftsmen who were well versed in the art of glassworking: his grandfather was an accomplished glassmaker, his father was a maker of glass jewelry, and his brothers were glassblowers in Berlin and Amsterdam. Geissler began his own career in this field at an early age, and by his mid-twenties he had worked for several universities constructing glass devices for scientific instruments.

In 1852 Geissler took on a permanent position as a mechanic for the University of Bonn. There he developed a working relationship with such prominent scientists as W. H. Theodor Meyer, Julius Plücker (1801-1868), and Eduard Pflüger (1829-1910). It was with Plücker that he built his reputation as a master craftsman of scientific instruments, particularly vacuum tubes.

The first instruments Geissler made for Plücker were thermometers of unprecedented precision. In order to acheive this he used very thin but strong glass, as well as a sensitive balance scale for calibration. In 1852 he constructed a "vaporimeter," a device used for measuring the alcohol content of wine.

Geissler's most important invention was an improved vacuum tube first described by Plücker in 1858, though Geissler himself claimed he had been constructing them since 1857. Scientists were eager to experiment with vacuum tubes in order to observe the behavior of electrical currents. "Geissler's tubes," as they were called, consisted of sturdy glass tubes from which most of the air had been evacuated and into which electrodes had been melted at each end. In order to create the near-vacuum within the tubes, Geissler invented a hand-cranked mercury air pump . The evacuation process was slow and tedious but provided the best results scientists had yet seen. The experiments conducted by Plücker and later by William Crookes eventually led to the discovery of the cathode-ray tube and to a greater understanding of the atom. In recognition of his outstanding craftsmanship, Geissler was awarded an honorary doctorate from the University of Bonn in 1868.