Pascaline Encyclopedia Article

Pascaline

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Pascaline

The pascaline, one of the earliest mechanical devices that performed addition and subtraction, was invented in 1642 by the eighteen-year-old French prodigy Blaise Pascal. Although other inventors, such as William Schickard, produced prototypes of calculating machines before Pascal, the pascaline was the first device that was manufactured and sold for general use. Pascal was granted a monopoly on the manufacture and sale of his invention by royal decree in 1649. Unfortunately its high price made it available only to the few who could afford it. Today, seven copies of the device still exist in museums and private collections.

Pascal's main motivation for designing a calculating machine was to ease the work of his father who, as president of the Board of Customs and Excise at Clermont Ferrand, was charged with the laborious work of reorganizing finances and taxation. As an accountant's tool, the pascaline was able to add and subtract numbers quickly as well as convert exchange rates for different currencies. The mechanism of the pascaline was similar in principle to the modern odometer in the sense that it contained a row of wheels with numbers upon them connected by gears. The cogs and gears connecting the wheels were arranged so that one complete revolution of the dial furthest to the right would cause the adjacent dial to turn by only 1/10 of a revolution, and so on. Later scientists and inventors, such as Gottfried Wilhelm von Leibniz, would produce calculating machines including mechanisms that made it possible to perform multiplication and division. Later still, calculating devices would adopt a binary system of mathematics, using ones and zeroes, which is easier for machines to handle.

After he had built over 50 variations of his device, Pascal patented the final version of his invention in 1649 and, in 1652, presented a copy of it to Queen Christina of Sweden, hoping that the calculating machine would yield a profit for him. It did not, and Pascal left it behind, directing his prodigious creativity toward matters of physics, mathematics, and religion, which occupied him until his untimely death at the age of thirty-nine in 1662.