PASCALINE

Blaise Pascal (1623 – 1662), a noted mathematician, philosopher and scientist, built the first mechanical adding machine called *pascaline* in *1642* based on a model described by Hero of Alexandria (2AD) to add up the distance a carriage travelled.

Pascaline was a train of gears basically made up of a one-tooth gear that turned a ten-tooth gear. The gear, with just a tooth was connected to the load or the hand-turned lever or object (later inventors added keys and a crank).

Each time the one tooth gear completed a revolution, the ten-tooth gear only turned an arc length equal to a tooth distance of the circular gear. This means that for the ten-tooth gear to complete one revolution, the one-tooth gear must have completed ten revolutions. This ten-tooth gear may be turning another gear with the same basic arrangement as stated above.

The one-tooth has a known distance in length, which corresponds to the distance moved on the ground when the machines were applied as an odometer and water meters. In some other applications, like mathematical calculations, if these wheels were turned in the proper sequences, a series of numbers was entered and a cumulative sum was obtained. The gear train supplied a mechanical answer equal to the answer that is obtained by using arithmetic.

Vital to note about Pascaline is that the basic principle of Pascal's calculator is still used today in water meters and modern-day odometers. Instead of having a carriage wheel turn the gear, Pascal made each ten-tooth wheel accessible to be turned directly by a person's hand.