A king once decided to honor that one of his subjects who had contributed the most to the furtherance of knowledge. Forthwith appeared a number of topflight researchers in the various fields of study. After carefully considering the credentials of the candidates, the king noticed a stooped and shabbily dressed old lady standing in the background.

"Who is that woman?" asked the King.

"She has come merely to observe, Sire," replied the King's minister. "You see, she is interested in the outcome because she taught all these candidates when they were young."

The King descended from his throne and placed the wreath of honor on the old teacher's brow.[1]

Seven[1]

In the first act of *King Lear*, when Goneril has just sent half of her father's retinue packing, Lear's fool tries to coax him out of his high dudgeon with the old Pleiades teaser: "The reason why the Seven Sister Stars are no more than seven is a pretty reason." Lear gets it in one. "Because there are not eight?" "Yes indeed," answers the jester, "Thou wouldst make a good fool."

Actually, they were both wrong. Nowadays, the naked eye can only see six stars, represented in the logo on the front of every Subaru automobile—*Subaru* is the Japanese name for the Pleiades. A seventh star—Pleione—is a star of variable magnitude, which is to say that its brightness increases and diminishes on the regular cycle of its nuclear furnace, making it more or less visible. At present, it can't be seen with the naked eye. Actually, the Pleiades cluster, in the constellation of Taurus, contains hundreds of stars. The seven visible to the Græco-Roman world were said to be the daughters of Atlas the Titan—Maia, Electra, Celæno, Taygeta, Merope, Alcyone, and Asterope—turned into stars and set in the heavens. The Babylonians, on the other hand, considered the Pleiades to be the personification of the seven weapons that Irra sent against the world, images of which were buried at house gates as good-luck talismans.

Other facts about **7**: The start of an arithmetical progression of six primes: 7, 37, 67, 97, 127, 157; 7! + 1 is a square = 5041 = 71^2—the only other known times that $n! + 1$ is a square is when $n = 4, 5$; if a and b are the shorter sides of a Pythagorean triangle, then 7 divides one of a, b, $a - b$, or $a + b$; all sufficiently large positive integers are the sum of 7 positive cubes.[3]

Coin Problem[4]

Of seven coins, which look much the same, five have the same weight while two are slightly heavier. [For example, the U.S. quarter is 5.67 g, while the Canadian quarter is 5.05 g.] Using a balance of two pans, without weights, how many operations are necessary to tell which are the two heavy coins. [Answer on p. 8]

[1] Howard Eves, *Mathematical Circles Adieu*, Prindle, Weber& Schmidt, Inc. ©1977, 171°, p. 79.
[2] A. Humez, N. Humez, and J. MaGuire, *Zero to Lazy Eight*, Simon & Schuster, ©1994, 109*f*.
[3] David Wells, *The Penguin Dictionary of Curious and Interesting Numbers*, Penguin Books, ©1986, p. 70.
[4] Pierre Berloquin, *100 Numerical Games*, Barnes and Noble Books, ©1976, #17, p. 19.