1067-P1-1697   **Edwin O'Shea*** (`edwin.oshea@ucc.ie`), School of Mathematics, University College, Cork, Ireland. *Bachet's problem: as few weights to weigh them all.*

A problem that enjoys an enduring popularity asks: "what is the least number of pound weights that can be used on a scale pan to weigh any integral number of pounds from 1 to 40 inclusive, if the weights can be placed in either of the scale pans?" W.W. Rouse Ball attributes the first recording of this problem to Bachet in the early 17th century, calling it "Bachet's Weights Problem". However, Bachet's problem stretches all the way back to Fibonacci in 1202, making it a viable candidate for the first problem in the thoroughly modern & active area of partitions of integers.

Remarkably, given the age of Bachet's problem, an elegant and succinct solution to this problem when we replace 40 with any integer has only come to light in the last 15 years. We hope to expound on this generalization here armed only with our sharp wits and a willingness to induct. In doing so we'll discover some of the joys of partitions of integers, recurrence relations, generating functions and counting integer points in polyhedra. (Received September 21, 2010)