I will survey the recent introduction of *very-well-poised hypergeometric series* in the context of the values of the Riemann zeta function at integers : the proofs of the irrationality of $\zeta(2)$, of $\zeta(3)$, of infinitely many of the numbers $\zeta(2n+1)$, etc, can all be obtain by a careful study of such series.

I will then give a few details of the proof of an important part of the so-called "Denominators Conjecture" (a joint work with C. Krattenthaler) for these series, whose complete proof could implies that least one amonsgt $\zeta(5)$, $\zeta(7)$ and $\zeta(9)$ is irrational.