1102-05-60 **Joel H. Spencer*** (spencer@cims.nyu.edu). *Erdos Magic.*

The twentieth century saw the elevation of Discrete Mathematics from "the slums of topology" to its current highly regarded position in the mathematical pantheon. Paul Erdős played a key role in this transformation. We call discuss some key results, possibly including:

i) Ramsey Theory. In 1946 Erdős showed that you could two-color the complete graph on n vertices so as to avoid a monochromatic clique of size k, where n was exponential in k. To do it, he introduced The Probabilistic Method.

ii) Random Graphs. The "phase transition" at $e = v/2$ edges.

iii) Crossing Number. We give a probabilistic argument to bound the crossing number of a graph on v vertices and e edges.

iv) 2-Coloring. Given m sets, each of cardinality n, one wants to two-color the underlying points so that no set is monochromatic. In 1963 Erdős showed that this can be done if $m < 2^{k-1}$ (color randomly!) and it remains an open question what is the largest $m = m(n)$ for which such a coloring can always be found. We give a striking new argument of Kozik and Cherkashin, finding the best (so far!) lower bound on $m(n)$.

Anecdotes and personal recollections of Paul Erdős will be sprinkled liberally throughout the presentation. (Received July 14, 2014)