1096-05-250        **Laszlo A. Szekely\*** (`szekely@math.sc.edu`). *Zarankiewicz' crossing number conjecture.*
Turán's Brick Factory Problem was raised in a forced labour camp in WWII—in a brick factory. The problem asked about the crossing number of the complete bipartite graph $K_{n,m}$, and the motivation was that $n$ kilns and $m$ storage areas should be connected by rails, minimizing the number of intersections where the bricks tend to fall from the trucks. Zarankiewicz published a solution for the problem and Urbanik confirmed it with an alternative solution. However, Kainen and Ringel discovered an error in the argument that has not been patched since then. I will discuss different concepts of crossing numbers that have been introduced and investigated hoping that they elucidate the problem. It took time to arrive at the clear understanding that we have to deal with different concepts of crossing numbers. This phenomenon fits perfectly Imre Lakatos' Popperian view of mathematics. Lakatos analysed two paradigmatic examples of conceptual development in mathematics: the concept of a real function and Euler's Polyhedral Formula. Note the basic tool for studying crossing numbers is the Polyhedral Formula. (Received August 23, 2013)