A claim was made in 1995 and 2011 publications by a metallurgist that the Jeffries planimetric method of determining grain size in E 112, and in DIN 50601 (it is the standard method in every national and international grain size test method and is described in every text book on quantitative metallography), is wrong and produces biased grain size ratings when the counts are low, is incorrect. This claim was based upon theoretical considerations described by Saltykov who proposed using rectangles for the planimetric method, rather than circles, to minimize bias at low counts of the number of grains inside the circle. Saltykov, however, did not publish actual test data to back-up this claim. The count levels mentioned are far below those recommended by E 112 for these methods, but could be encountered in manual measurements of the size of very coarse grains (which might be performed, but is rarely done).

Actual grain size measurements using both test circles and rectangles, with a very wide range of grains within the test figures and intersecting their borders, showed that the ASTM Jeffries planimetric and the Hilliard single-circle intercept methods produced statistically identical measures of the ASTM grain size, G, down to count levels far below what is recommend – down to 30 for (inside + 0.5 intercepted) for the planimetric method and down to 20 grain boundary intersections, Pintersections, for the intercept method (well below the recommended minimums of 50 and 35, respectively). At levels below these limits, bias was small – mainly data scatter was observed at counts <10 for both methods. The Saltykov planimetric method using rectangles gave the best data, identical to the E 112 data, with statistically identical grain size values down to 10, and was bias free, but also exhibited data scatter at counts <10. The claim about bias by the Jeffries method has no validity. The model used in the claim did not evaluate the effect of varying the counting conditions which was the basis of the claim about bias being created. Also, they did not do actual tests to prove that their model was valid and their claim about bias was correct. Models do not have any validity if they do not test the actual conditions and are not verified by actual experimental data.