
correspondence

How accurate was the carat?

SIR, — The carat, a well known jeweller's measure of weight, is generally defined as the weight of a seed of the carob tree (*Ceratonia siliqua*; Leguminosae) or about 200 mg (*Webster's New World Dictionary*). It is traditional to view seeds as having very low intra specific variation in weight, and therefore not surprising to find them used as standards of commercial weight. But how reliable was this species of seed as a standard?

The carob is a small tree native to North Africa and has the largest dry and hard seed of any Mediterranean plant. In September 1978, I haphazardly collected 12 freshly fallen pods from the ground below a healthy carob tree growing in a courtyard of the Hebrew University, Jerusalem. In April 1979, the seeds were removed from the indehiscent pods and weighed. There were ten seeds that weighed only 0.07 to 0.13 g, and I discarded these seeds from further analysis because they were variously malformed and would be noticed by any discerning merchant or shopper. The remaining 156 seeds could not be sorted into groups of heavier or lighter seeds, and this set had a mean weight of 0.198 g (s.d. = 0.024), remarkably close to the supposed weight of the carat.

However, there is no reason to believe a merchant would be so stupid as to use average (randomly selected) carob seeds as balance weights. There were 48 seeds (31%) in the sample that looked normal but weighed less than 0.2 g. All a merchant would have to do is use a gravitational sorting system on a large sample of seeds to obtain a pool of carob seeds up to 25% underweight to use when making sales. The other end of the weight distribution contained 64 (41%) that weighed 0.21 to 0.24 g. These heavy seeds would have been most useful when making purchases. In short, only 28% of the seeds in a carob seed crop would have given an honest measure. This study was supported by a subsidy from the Israeli government.

Yours faithfully,

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