FIGURE 14.14. The breeding value of an individual can be measured from the average trait value in offspring produced when it mates randomly with the rest of the population. The *top curve* shows the distribution of the trait in the population. An individual with phenotype P is chosen. It has an underlying genotypic value G, which is the average trait value of a set of identical genotypes, reared under the same conditions (*middle curve*). The chosen individual is mated with others at random, producing the distribution of offspring shown in the *bottom curve*. The difference between the mean of these offspring and the population mean (*dashed line*) is half the breeding value ($A/2$); the factor of 1/2 arises because offspring get only one-half their genes from the chosen parent.