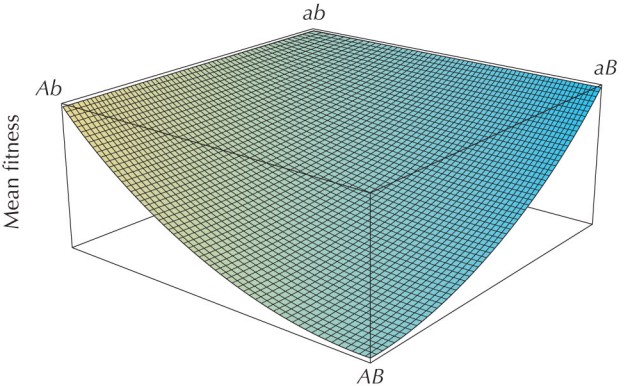

FIGURE 22.25. In the Dobzhansky–Muller model, an ancestral aabb population can substitute either allele A at one locus or B at another locus without any loss in fitness. However, if any genotype carrying both A and B dies or is sterile (i.e., has zero fitness), then there will be complete reproductive isolation. The adaptive landscape shows the mean fitness of a random-mating population as a function of allele frequencies at the two loci. The ancestral population fixed for a and b can evolve along ridges of high fitness, but when the derived populations (*Ab, aB*) cross, fitness is lost.