



FIGURE 3.20. A complex structure can evolve even if every change to it reduces fitness: All that is required is that there was at least one path from ancestor (*A*) to descendant (*D*), along which fitness was high and increasing. The diagram shows an **adaptive landscape** (see p. 472), which plots average fitness against the state of the population (morphology, allele frequencies, etc.). In reality, the landscape fluctuates, giving further pathways for evolutionary change. Moreover, evolution can proceed along many axes, not just the two shown here.