Dobras, Falhas e Fraturas

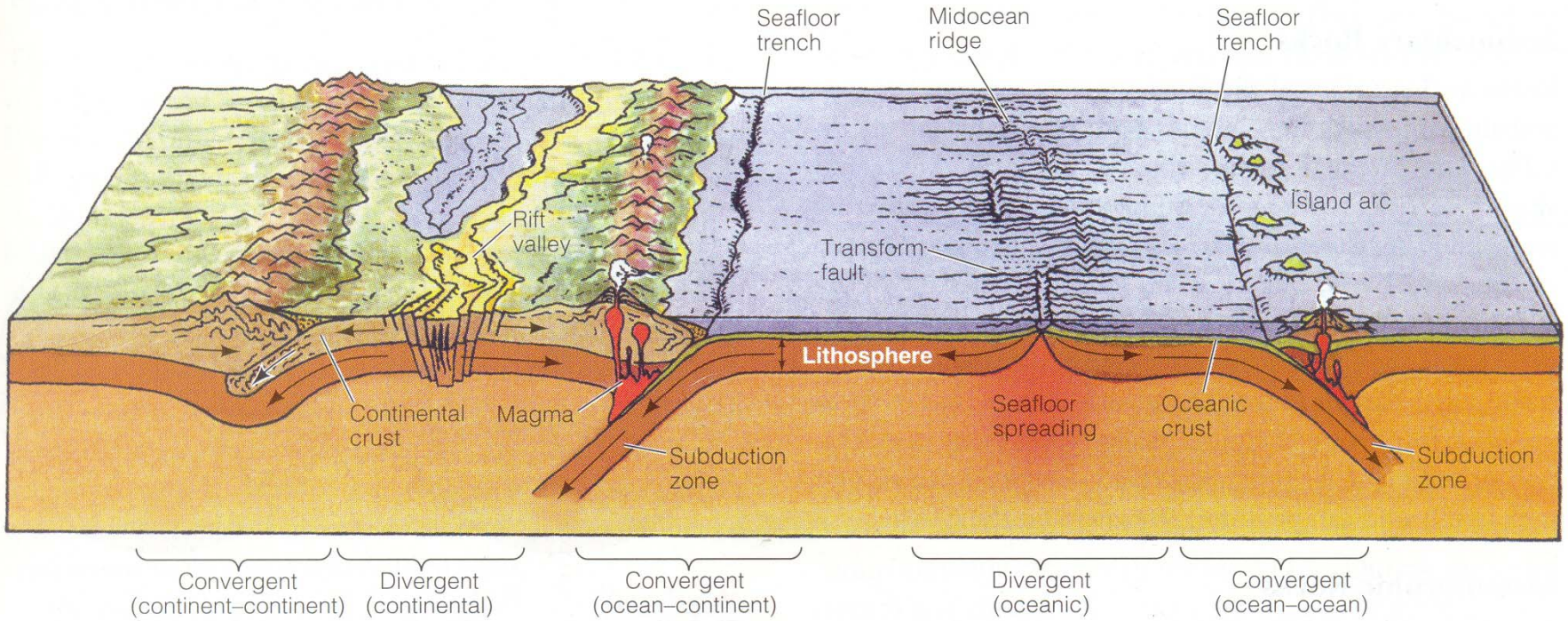
FALHAS: deslocamento relativo entre camadas (estratos) e foliações.
FRATURAS: Não há deslocamento entre acamadas ou foliação.
DOBRAS: dobramento de camadas e foliações.

• Os processos deformacionais (deformação de rochas) formam estas estruturas tectônicas (secundárias) .

•As estruturas Não-Tectônicas ou (primárias) são formadas por processos sedimentares, ígneos e metamórficos. EX: estruturas sedimentares em geral, vesículas em rochas ígneas

Falhas, fraturas e dobras ocorrem em ROCHAS ÍGNEAS SEDIMENTARES E METAMÓRFICAS . São bem freqüentes em RM.

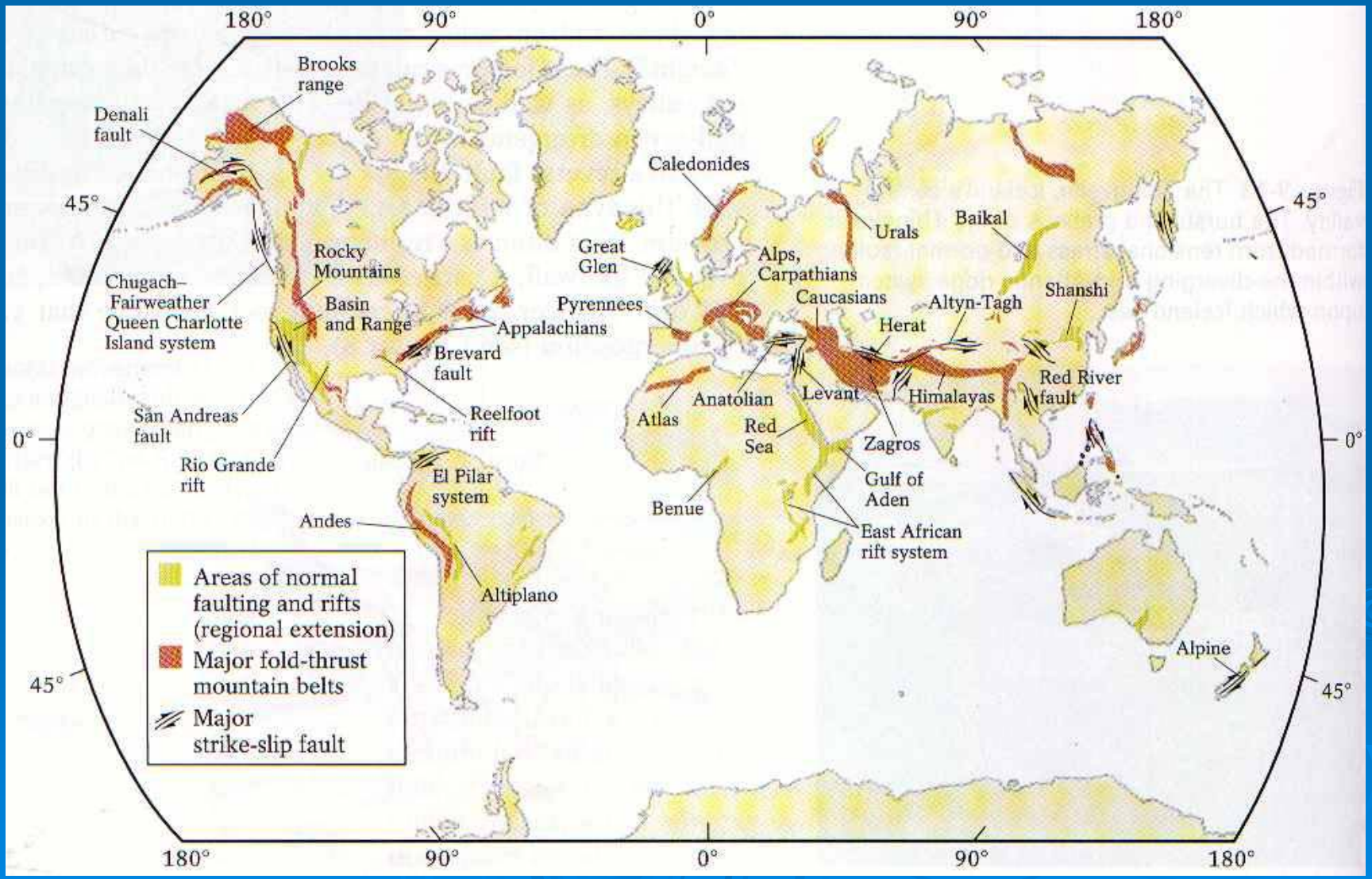
Grandes ambientes tectônicos de formação de falhas e dobras



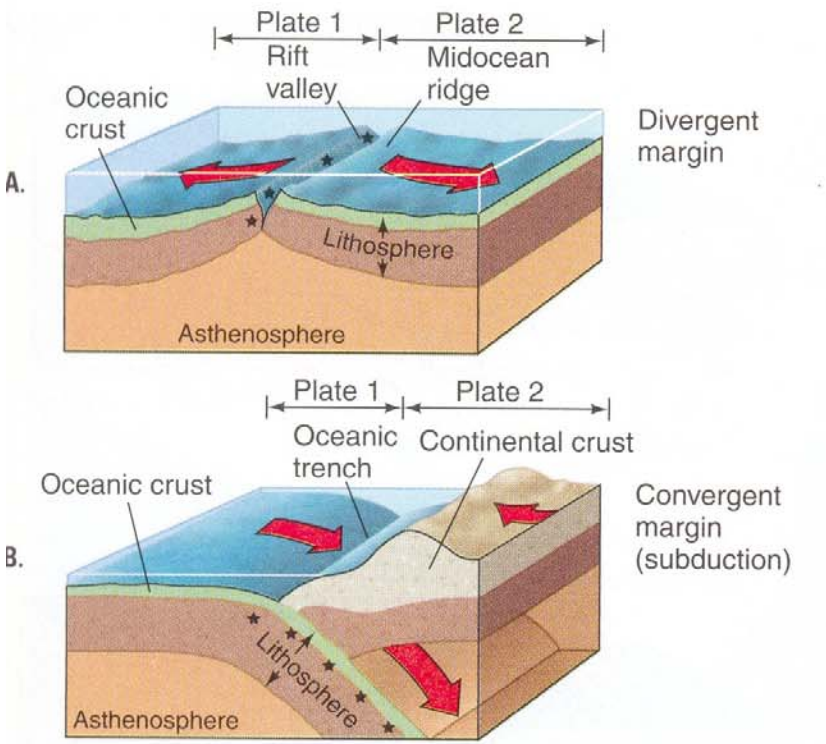
▲ FIGURE 1.17

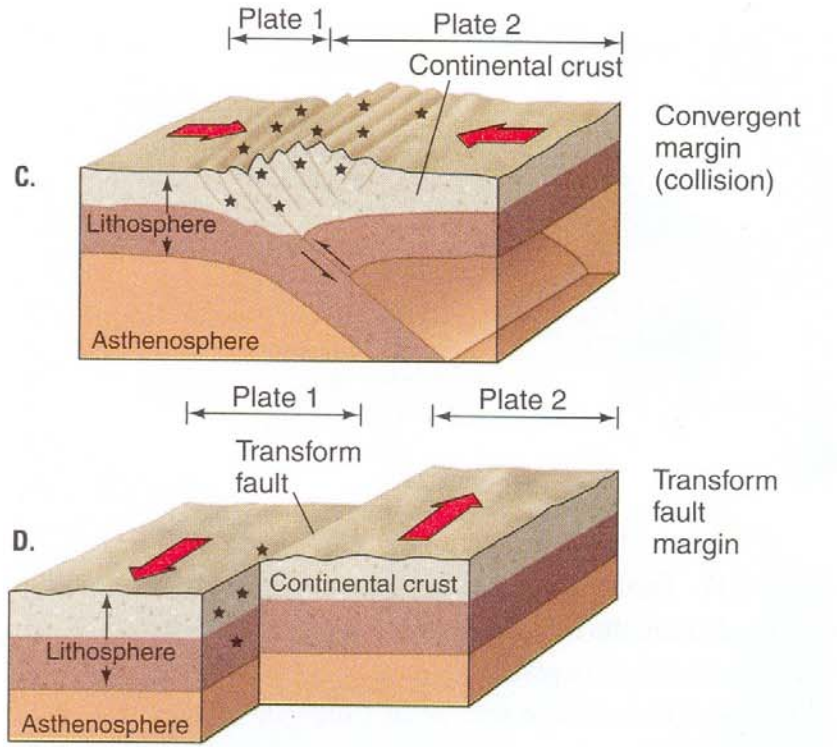
The various types of plate margins: divergent (spreading or rifting); convergent (subduction and collision zones); and transform (lateral motion). In an oceanic setting, divergent margins are marked by midocean ridges, like the Mid-Atlantic Ridge. In a continental setting, divergent margins are marked by rift valleys, like the East African rift. Ocean-ocean and ocean-continent convergent margins where subduction occurs are marked by deep trenches and lines of volcanoes. Continental collision zones, as in the Himalaya, are marked by mountain ranges. Transform margins vary in their topographic features; they are sometimes marked by a long linear valley.

Grandes cadeias de montanhas: resultados de subducções e colisões entre oceanos e continentes: Formação principal de dobras e falhas inversas e, ainda, falhas normais em ambientes associadas.

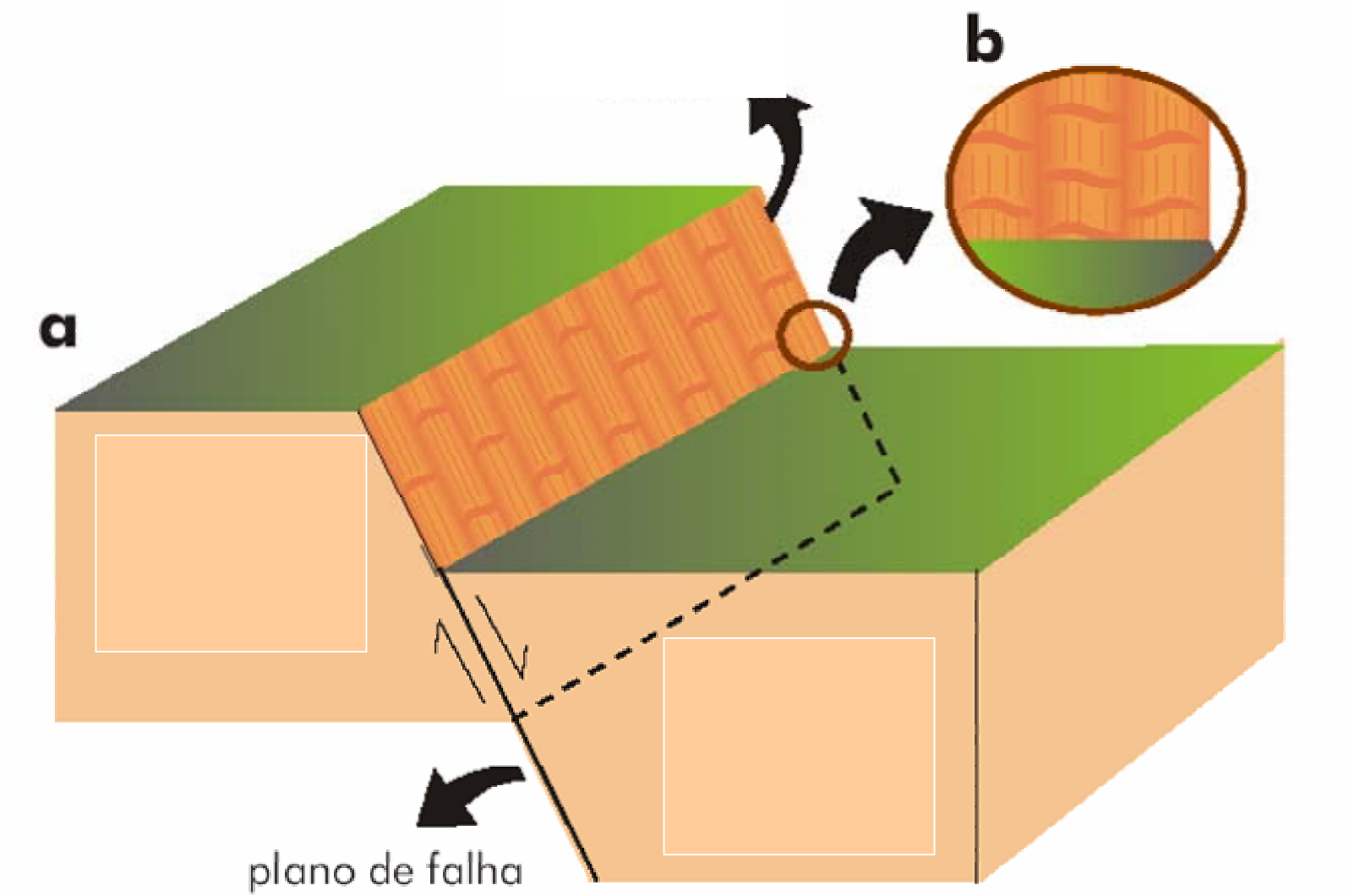


Margens de placas e formação de falhas e dobras





igure 2.11 Plate Margins The various kinds of plate margins. Stars (★) indicate earthquake centers. A. Divergent margin r spreading center; its topographic expression is a midocean idge. B. Convergent subduction margin; its topographic expression is an oceanic trench. C. Convergent collision margin; its topographic expression is a mountain range. D. Transform fault margin; it does not produce a consistent topographic expression but is often marked by a long, thin valley due to preferential erosion along the fault.


b
a
plano de falha

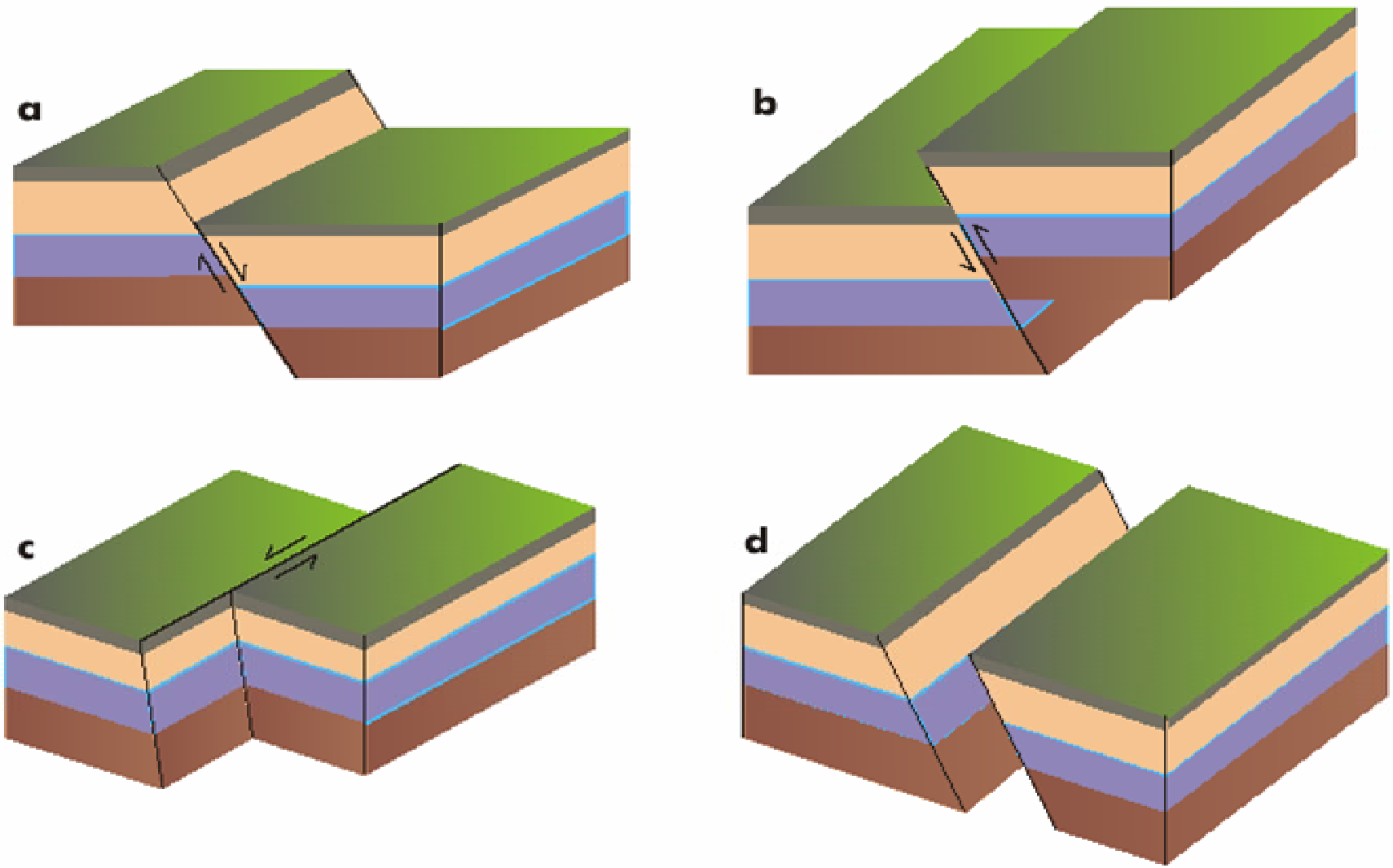


Fig. 19.32 Classificação de falhas com base no movimento relativo entre blocos adjacentes. a) falha normal; b) falha inversa; c) falha transcorrente e d) oblíqua.

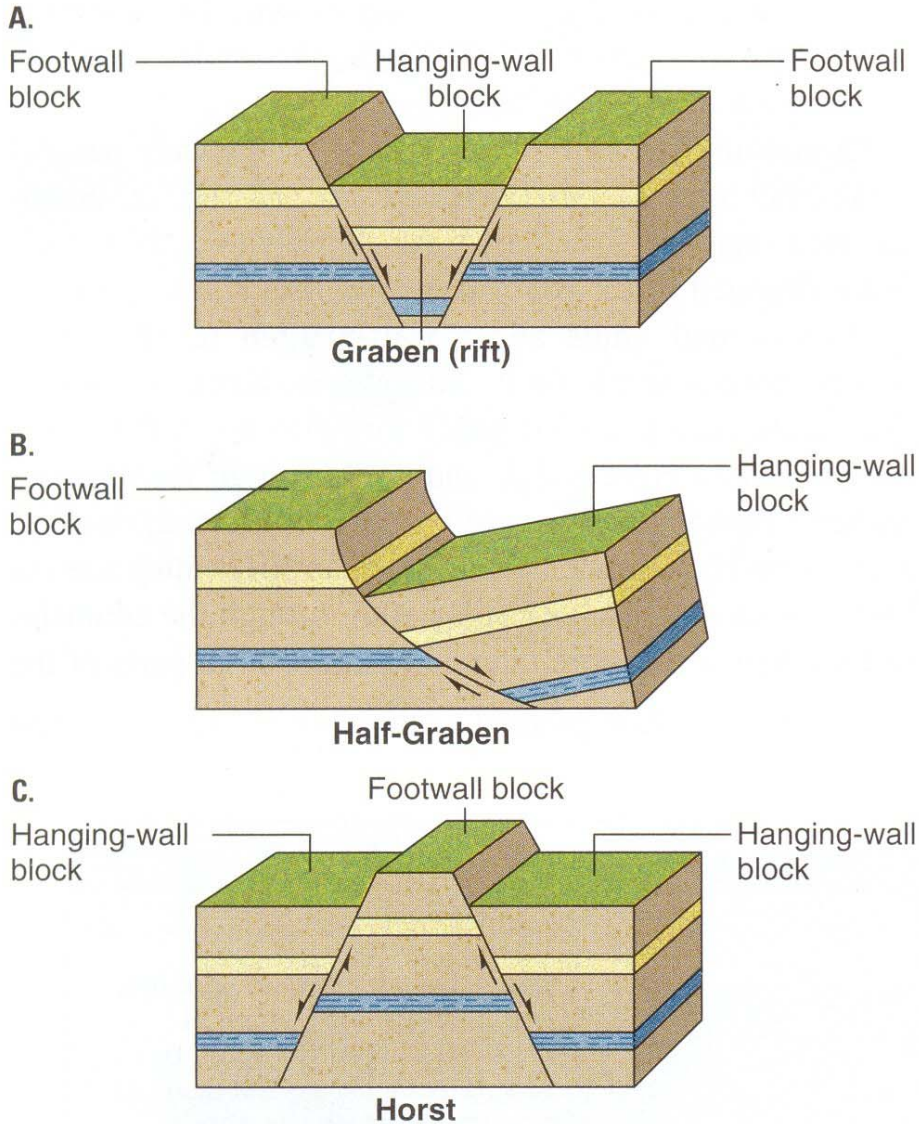


Figure 9.14 Horsts and Grabens Horsts and grabens form when tensional stresses produce normal faults.

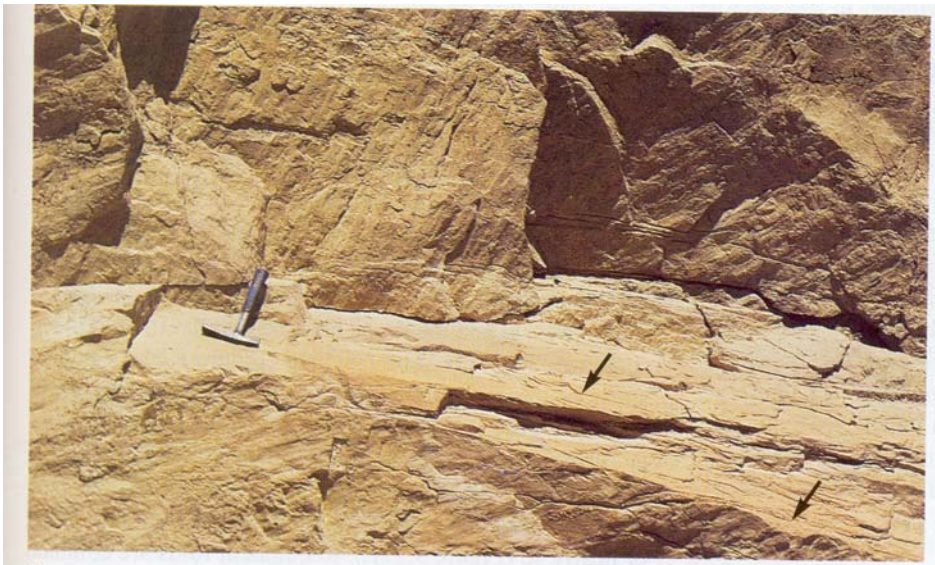
Graben= bacia sedimentar
Horst = Montanha/Serra

Falhas normais

Falha inversa

19.28 Falhas, a maioria normal, afetando arenitos e conglomerados da Formação Itaquaquecetuba, em Itaquaquecetuba, SP. Foto: C. Riccomini.

Falhas Transcorrentes



A.

B.

Figure 9.20 Slickensides and Breccias The effects of faulting. A. Slickensides on a fault surface, Borrego, California. The hanging-wall rocks have been removed by erosion, thus exposing the fault on the footwall. B. Fault breccia, Titus Canyon, Death Valley. Angular gneiss fragments (dark) broken by faulting are set in a matrix of rock flour and calcite.

Evidências de falhas em rochas ígneas, sedimentares e metamórficas:

-deslocamento de camadas sedimentares e foliações metamórficas ao longo do plano de falha

-Estrias e brechas

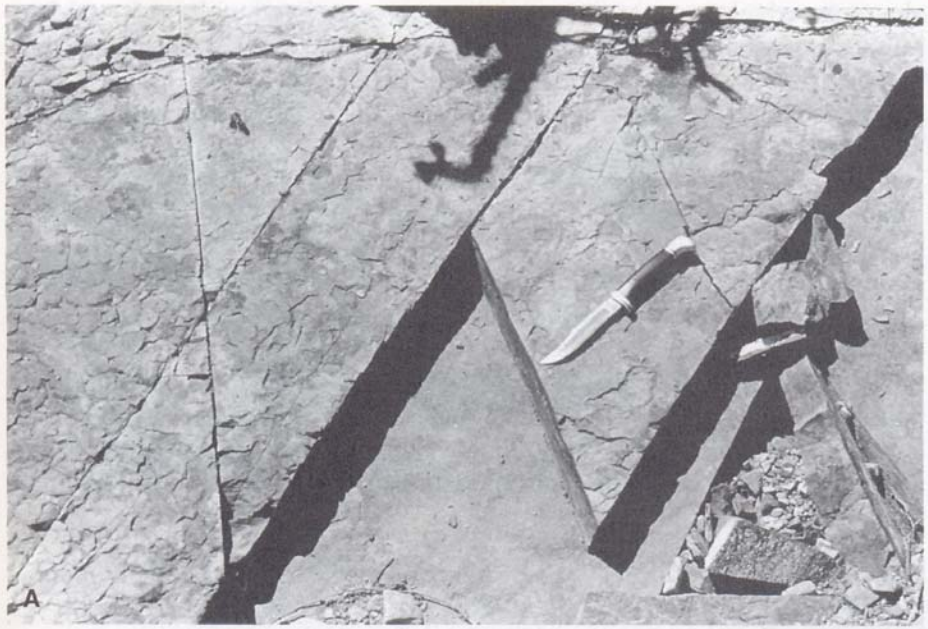


Figure 5.6 (*A*) Shear fractures in Cretaceous sandstones in the Tucson Mountains, Arizona. (*B*) Slickenlines on shear fracture cutting Jurassic siltstones in the Tucson Mountains, Arizona. The slickenlines are best expressed in the quartz vein coatings of the fracture surfaces. (Photographs by G. H. Davis.)

Fraturas

Fraturas

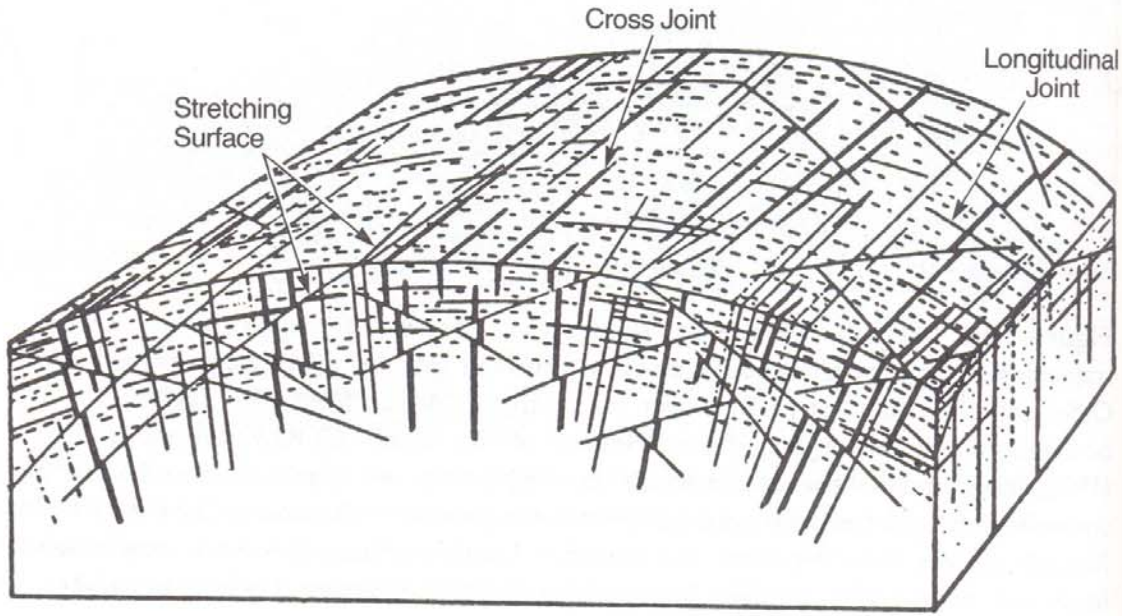
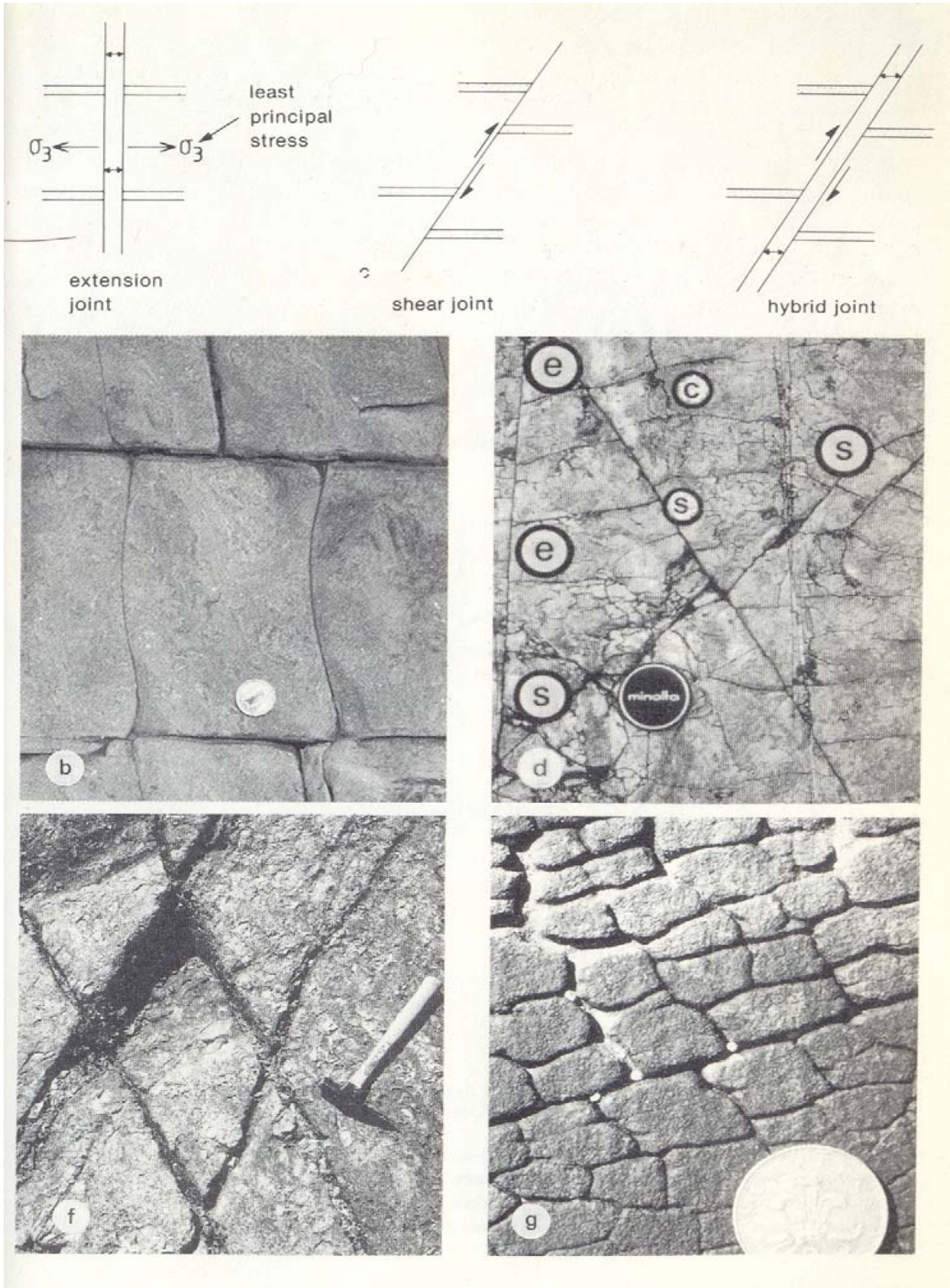


Figure 5.70 Block diagram showing ideal primary fracture pattern in a granitic pluton. [From Cloos (1922).]


least
principal
stress
σ_3
σ_3
extension
joint
shear joint
hybrid joint
b
e
c
s
s
e
s
minolta
d
f
g

Fraturas

Elementos geométricos de uma dobra

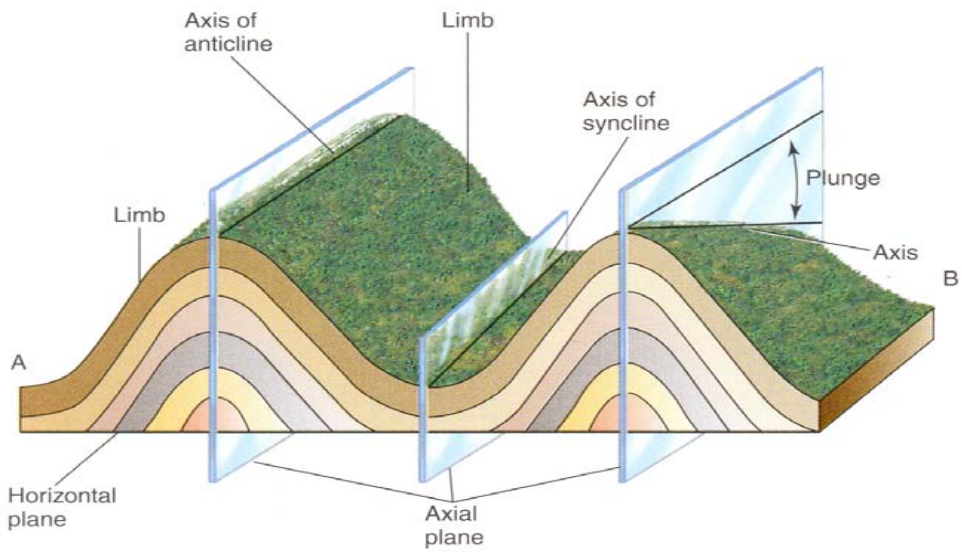
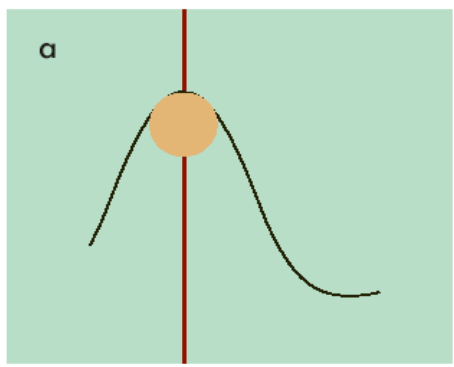


Figure 9.21 Geometry of a Fold Features of simple folds. Note that the strata dip away from the axis of an anticline but toward the axis of a syncline. A. Fold axis horizontal. B. Fold axis plunging.



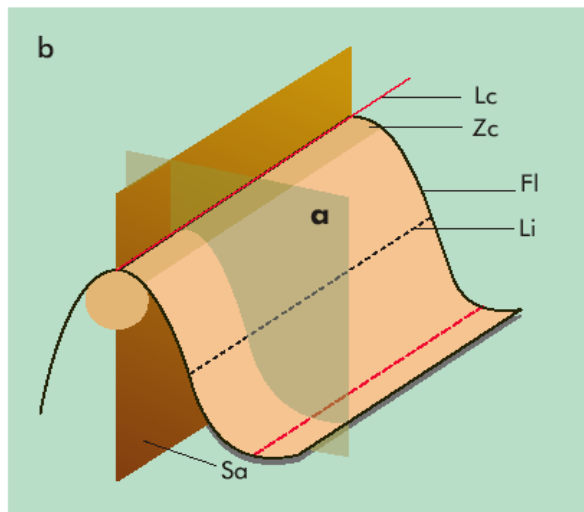


Fig. 19.6 Elementos geométricos de uma superfície dobrada cilíndrica (a) e plano de perfil de uma dobra (b): Sa- Superfície axial; Lc – Linha de charneira; Li - Linha de inflexão; Zc - Zona de charneira e Fl - Flanco.

Principal classificação de dobras

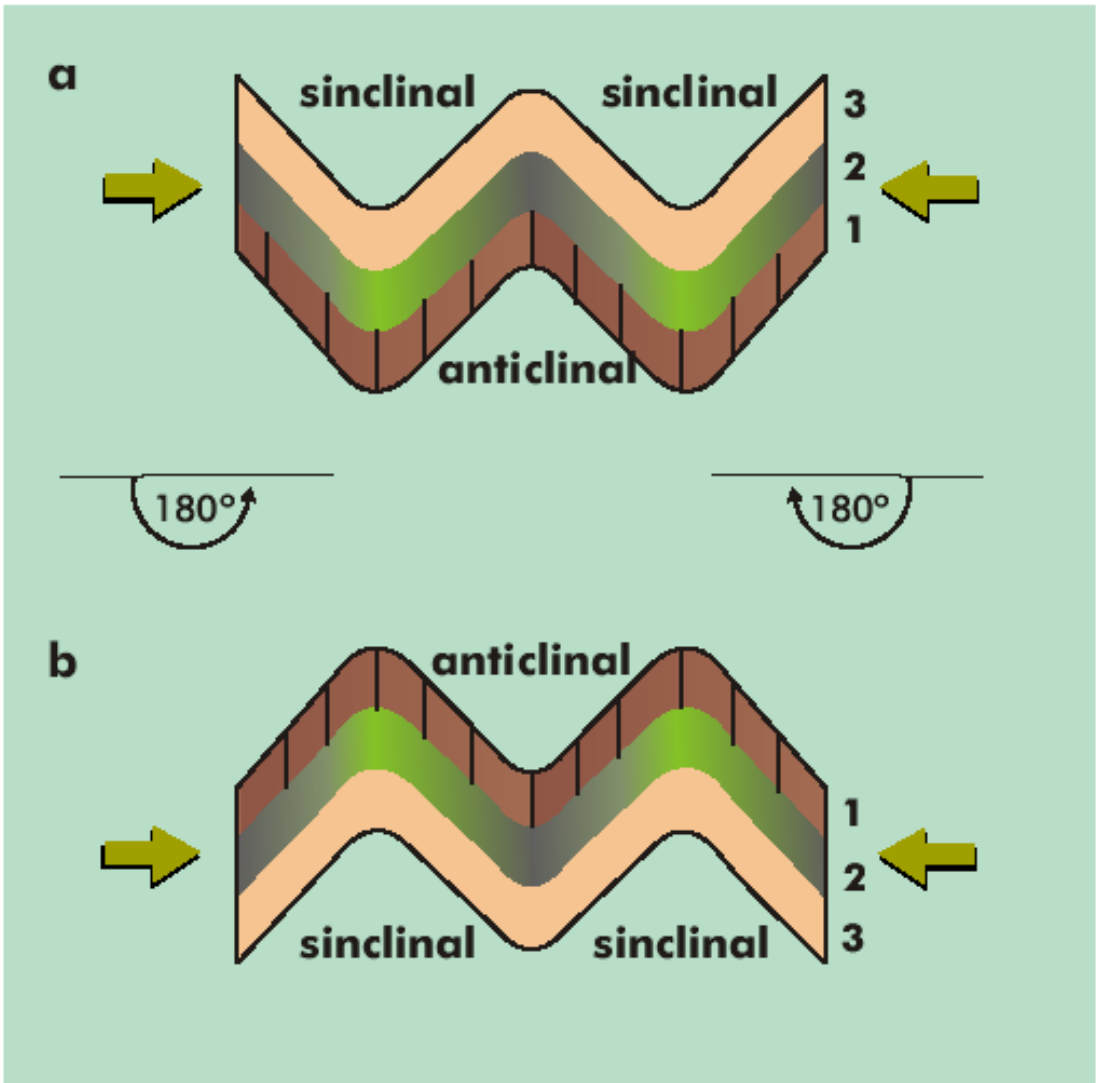


Fig. 19.19 Classificação de dobras com base na estratigrafia das camadas: sinclinal e anticlinal. Seqüência estratigráfica das camadas: 1 mais antiga, 2 intermediária, 3 mais nova. Em a, seqüência normal, em b, seqüência invertida.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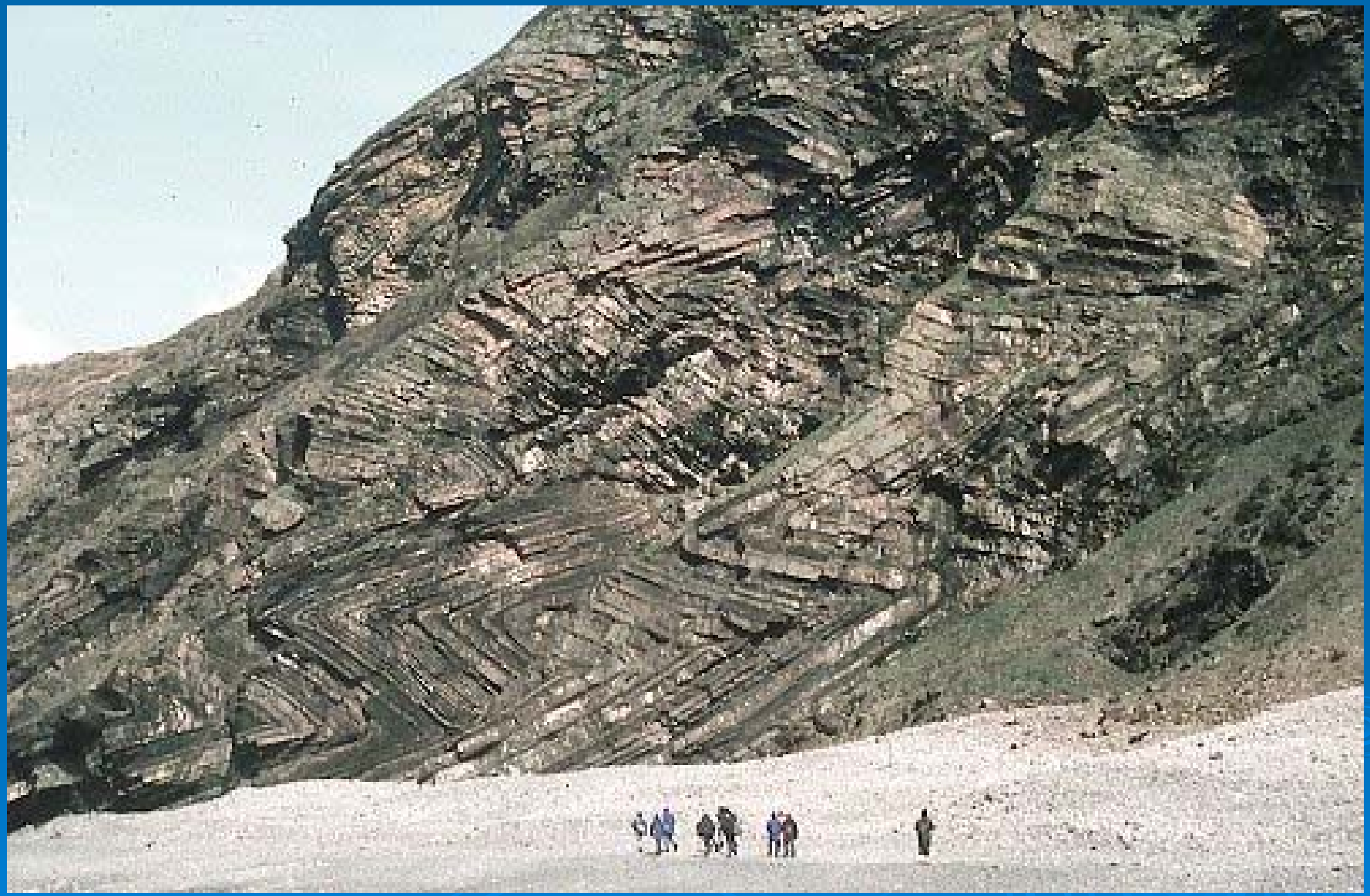


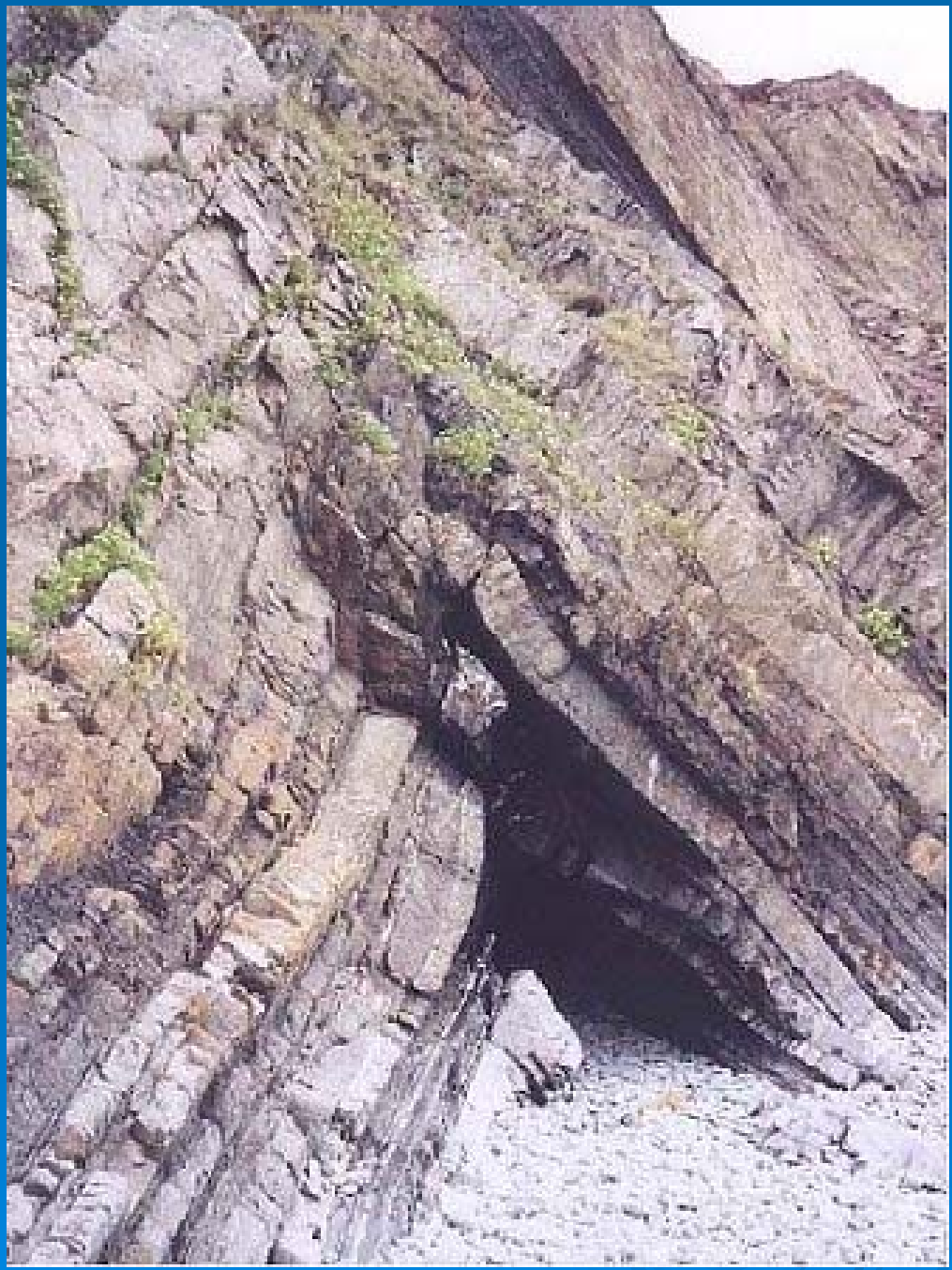
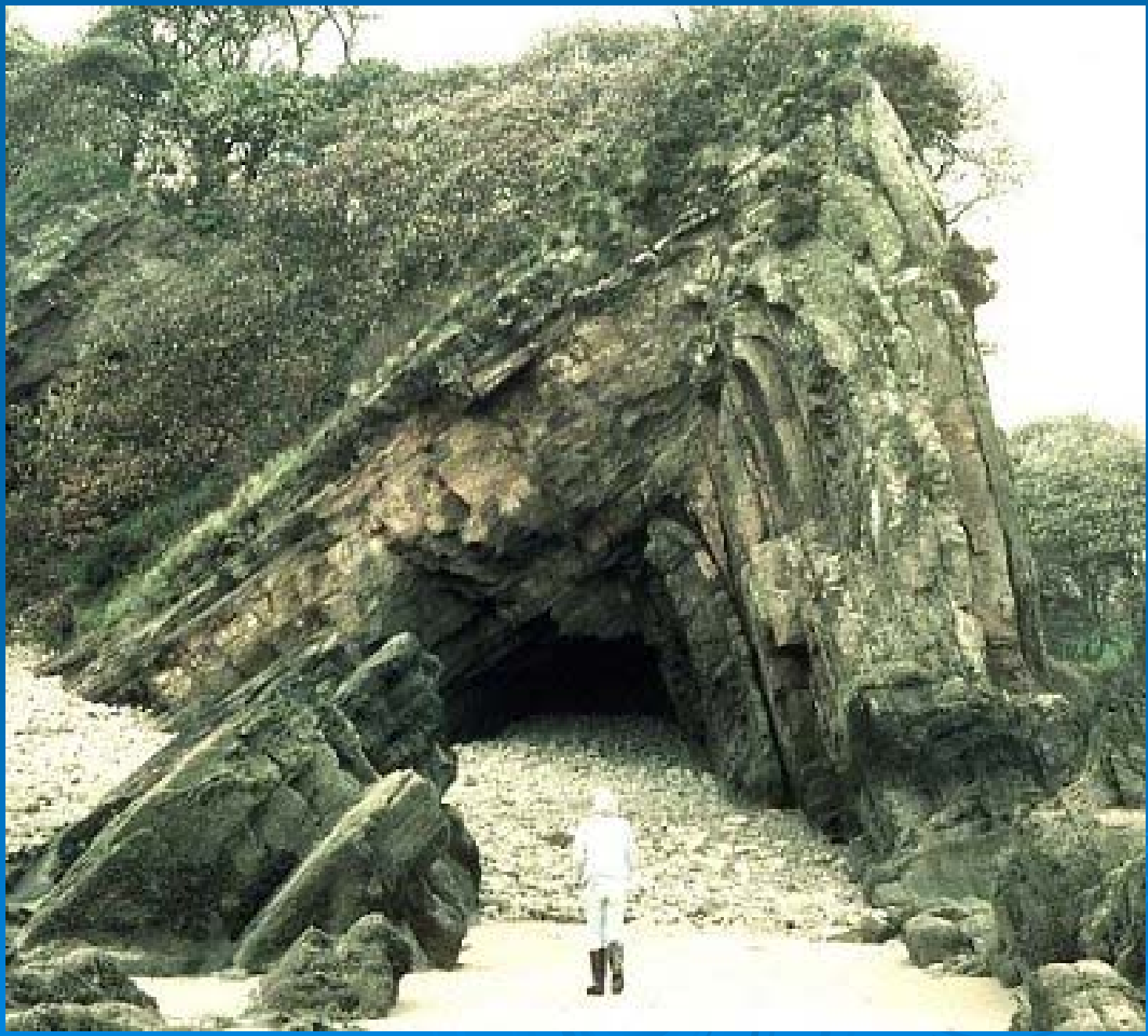


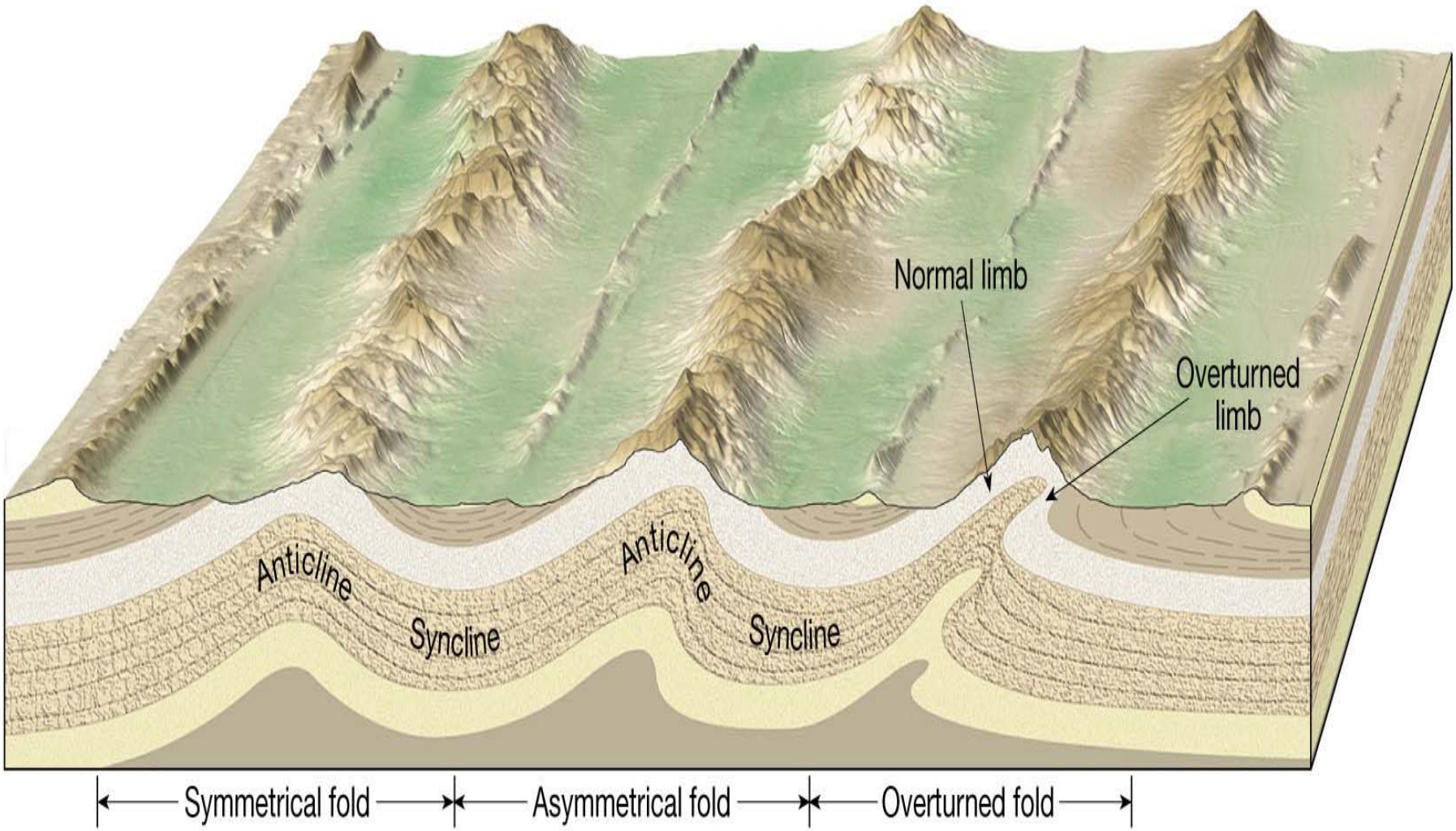
Figure 15.5 Deformed sedimentary strata exposed in a road cut near Palmdale, California. In addition to the obvious folding, light-colored beds are offset along a fault located about one-third of the way in from the right-hand edge of the photograph. (Photo by E. J. Tarbuck)



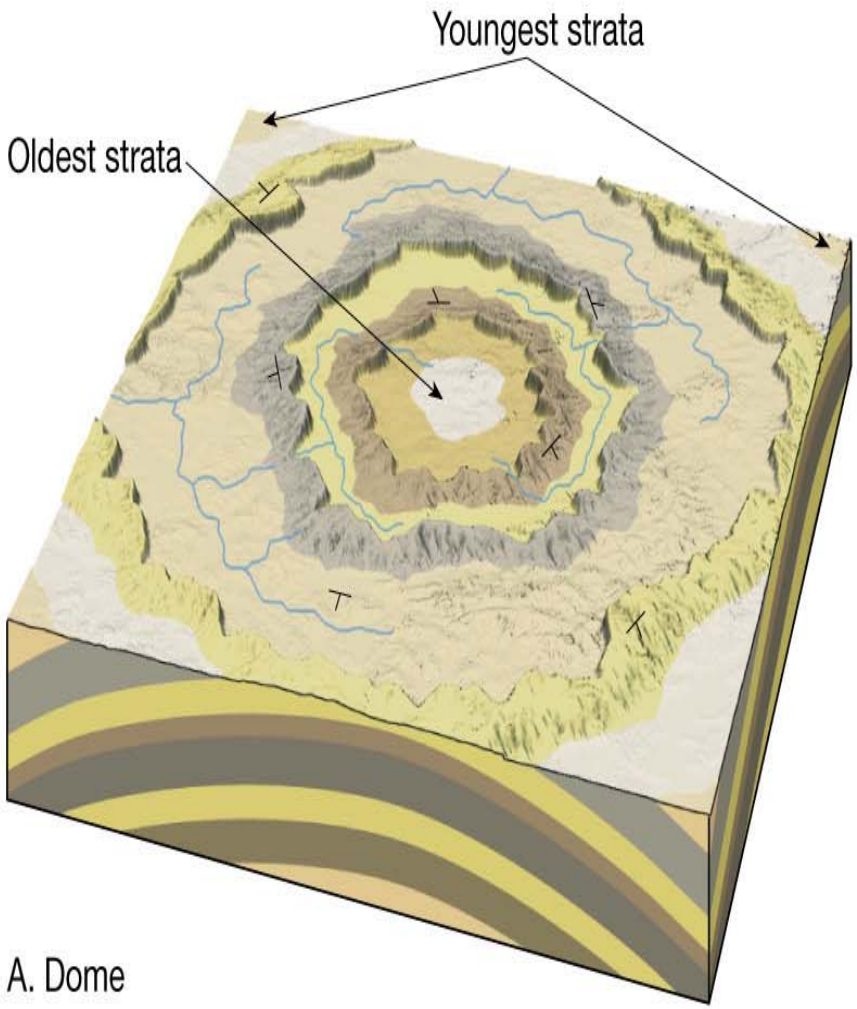
B.

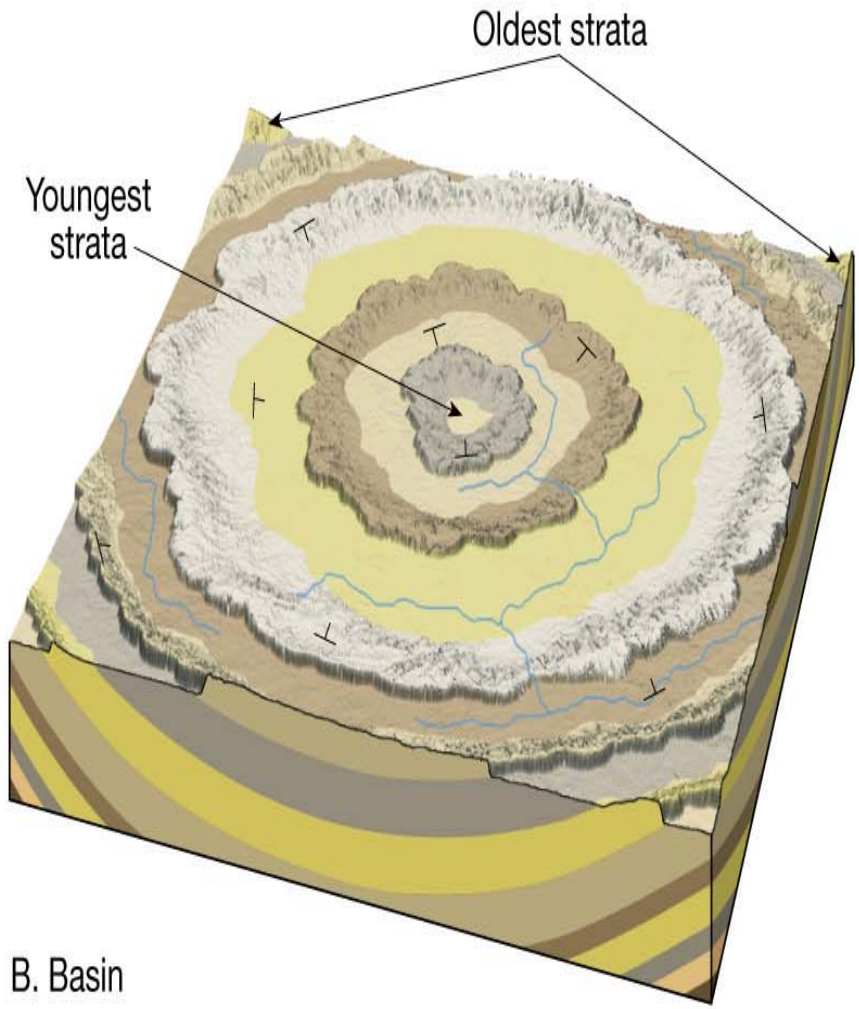
Bunter Sandstone, Merseyside, U.K. B. Bending of strata by ductile deformation; limestones in Crete.

Anticlinais e sinclinais



Padrões circulares são típicos em áreas de dobras tipo domos e bacias





Cadeias de montanhas formadas por falhas e dobras