



Fig. 5-3. Genetic characterization of natural gases by isotopic variation: (a) relative concentration of deuterium and  $^{13}\text{C}$  in  $\text{CH}_4$ ; (b) relative concentration of  $^{13}\text{C}$  in  $\text{CH}_4$  and in  $\text{C}_2\text{H}_6$ , with arrow Md indicating the result of mixing with isotopically-positive  $\text{CH}_4$  from depth, and arrow Ms indicating the result of shallow mixing with isotopically-negative  $\text{CH}_4$  of biogenic origin (reproduced with permission from Schoell, 1983a, 1983b).