



FIGURE 19.4. Compaction and pressure solution. (A) Uncompacted ooid-peloid grainstone. Width of field 2 mm. Courtesy of Tim Lowenstein. (B) Compacted ooid-peloid grainstone with sutured polygonal contacts and long contacts between many of the grains. Note the more open areas (white arrows) protected from compaction by pre-compaction early cementation. Width of field 2 mm. Courtesy of Tim Lowenstein. (C) Compacted ooid-peloid grainstone where early isopachous cements have been crushed and spalled (arrows). Width of field 2 mm. Courtesy of Tim Lowenstein. (D) A skeletal fragment (bivalve shell) fractured due to loading. Width of field 1.6 mm. From Scholle and Ulmer-Scholle (2003). AAPG © 2003 reprinted by permission of the AAPG, whose permission is required for further use. (E) A model of the differential lithostatic pressure at the contact of two spherical quartz grains. Pressures  $p_1$  to  $p_3$  are different from each other and from the pore-fluid pressure,  $p_w$ . The pressure differences lead to a chemical potential gradient down which silica diffuses to precipitate as overgrowth cements (ruled pattern). From Hutcheon (1990). (F) A stylolite in limestone. The height of the photograph is  $\sim 15$  cm.