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For over four hundred years, natural scientists have been intrigued and fascinated by the tilings on plant surfaces and the arrangements of leaves/stickers (phylla) on those surfaces. I will survey some recent attempts to explain what is observed. One has to be able to account for the various tilings into ridges, hexagons, diamonds, the arrangements of phylla along families of spirals enumerated by consecutive members of the Fibonacci sequence, and the relations between the two. In addition, one should be able to understand the nature of the transitions which occur from whorls to spirals and from spirals to spirals with more arms as the plant grows. (Received February 12, 2007)