of the basic forces in generating periodic oscillations of the water surface, and their dependence on such factors as the latitude, the declination of moon and the relative effects of the moon and the sun.

During the 1920's, Proudman (see e.g. Proudman, 1925) published a series of articles in which he investigated various aspects of tidal motion including the Coriolis effect due to earth's rotation. The significant advance made relative to the equilibrium theory was accounting for the actual motion of water particles on the rotating earth. Computer technology has now made it feasible to simulate tidal motion over entire oceanic masses. Early computations were based on solutions of Laplace's tidal equations (LTE). A review of numerical models of the sixties and the seventies has been provided by Hendershott (1977). Subsequently, more general forms of the Navier-Stokes equations of motion have been solved. A recent review of solutions of these ocean tidal equations (OTE) has been provided by Schwiderski (1986).

Tides in the nearshore environment are considerably influenced by winds, waves, bottom topography as well as temperature- and salinity-induced stratification. Where astronomical tides are small, e.g. along U.S. Gulf coast, non-tidal forcing often assumes overwhelming significance and modeling of a purely deterministic nature becomes difficult. Physical considerations along these lines have been reviewed by Csanady (1984).

Proudman's contributions also included considerations for tidal motions in channels of various cross-sectional shapes, and the effect of coastal configuration on offshore tidal features. A good review of simple analytic approaches for tidal propagation in estuaries, without and with bottom frictional effects, has been presented by Ippen and Harleman (1966). For the fundamentals on numerical methods for estuarine hydrodynamics, the works of Dronkers (1964) and Abbott (1979) may be cited. Nihoul and Jamart (1987) have edited a series of contributions on the state-of-the-art modeling techniques of marine and estuarine hydrodynamics using three-dimensional numerical approaches.

A special class of tidal hydraulics pertains to the hydraulics of tidal inlets or entrances connecting the sea to relatively small and deep bays. A simple, coherent theory for predicting water level variation in the bay for a given, sinusoidally forced, sea tide has been presented by Keulegan (1967). Mehta and Özsoy (1978) have reviewed various approaches including developments previous and subsequent to Keulegan's contribution.