1056-01-254 **Tom Archibald*** (`tarchi@sfu.ca`), Dept of Mathematics, Simon Fraser University, Burnaby, BC V5A1S6, Canada. *Maxwell, Poincaré and the Rings of Saturn.* Preliminary report.

Poincaré's interest in the equilibrium shape of rotating fluids under gravitation probably dated to his early studies of celestial mechanics, with significant discoveries of bifurcation points in the Jacobian series of equilibrium figures published in 1885. This led him to a conjecture that the bifurcations associated with the sequence of zonal harmonics led to systems of a planet with increasingly many moons. This conjecture was, in Chadrasekhar's words, "so intoxicating that those who followed Poincaré were not able to recover from its pursuit." Be that as it may, this interest motivated a course at the Sorbonne in 1900, and the culmination of this course was a discussion of the rings of Saturn. Basing his discussion on work of both Kovalevskaya and Maxwell, he argued that the rings could not be solid or liquid. In this paper we give an outline of these developments, some reasons why the question was considered important, and what such issues have to do with the prestige of mathematics around 1900. (Received August 20, 2009)