(As recommended, I am only doing an annotated bibliography for the Dessler paper this time)

The first seven pages of the paper are devoted to summarizing the history of solar wind research, and the merits and drawbacks of the various ideas that were presented. These parts aren’t very relevant (things like finances and pictures of reindeer sleds are discussed). Parker’s papers about the hydrodynamic solar wind theory come up a lot, it would help to look at those later. Helpful information begins with discussion of the sun’s corona, which is approximated as a hydrodynamic fluid. The corona is heated partially by magneto-acoustic waves. One theory is that solar winds are generated by the continuous expansion of the corona because gravity isn’t enough to contain it. We assume that the corona is an ideal gas with local thermodynamic equilibrium, and magnetic effects are ignored. The corona is compared to a deLaval nozzle, with the solar gravitational force acting as the choking mechanism that allows for supersonic speeds. The corona reaches supersonic speed at a radius of .

Next the paper discusses how the solar wind actually interacts with the sun’s magnetic field. Because of the rotation of the Sun, solar wind leaves in an Archimedes spiral. Parker argues that the spiraling wind pulls the magnetic field lines as well, which was later observed by McCracken. Dessler describes equations for the magnetic field with parallel and perpendicular components to the radius vector. The strength of the magnetic field means that solar wind velocities must be greater than 100 km/sec. it is noted that the solar wind could be better explained through electric fields and nonmoving magnetic fields, but the corotation idea is still useful to describe the interplanetary medium.

Finally, Dessler looks at how solar winds cease to exist. Its mass density decreases like 1/r^2. One theory for how the wind and magnetic field terminate deals with interstellar atomic hydrogen. An area called the heliosphere is defined as where the solar wind has supersonic speed. At some point, the interstellar medium has enough pressure to slow the wind down to subsonic speed. This pressure can be approximated to be entirely due to magnetic pressure and a small amount of pressure from hydrogen. Overall, I think it would be a very good idea to read some of the Parker papers about solar winds, because those were referenced many times.