The effect of aerosols on clouds remains one of the largest sources of uncertainty in climate studies and many of the aerosol-cloud interactions are associated with cloud microphysical processes. A double moment warm rain scheme has been developed that includes the effects of turbulence on droplet collision rates and this scheme has been implemented in a large-eddy model to investigate the impact of turbulence effects on clouds. Simulations of shallow cumulus and stratocumulus show that different precipitation-dynamical feedbacks occur in these regimes when the effects of turbulence are included in the microphysical processes. Both turbulent microphysics cases show an increase in precipitation due to a more rapid conversion of cloud water to rain. In the shallow convection case the enhanced latent heating reduces the entrainment and buoyancy production of turbulent kinetic energy. Whereas the stratocumulus case shows a positive precipitation feedback with enhanced rainwater producing greater turbulent kinetic energy. Sensitivity studies where the cloud droplet number was varied show that greater aerosol loading suppresses the stratocumulus precipitation leading to larger liquid water paths. This positive second indirect aerosol effect was produced in all of the simulations except for the case using the turbulent microphysics with the highest droplet number, which suggests a limit on the amount of liquid water that can be produced. While the sign of the second indirect effect is negative in the shallow convection case whether the effects of turbulence are considered or not, the magnitude of the effect is doubled when the turbulent microphysics are used.