Pulsars are neutron stars -- the extremely dense, strongly magnetized, rapidly spinning remnants of supernova explosions. They also appear to be nature's most precise clocks. Discovery of the first orbiting pulsar opened a new subfield of astrophysics in which the relativistic nature of gravity is tested through precise comparisons of "pulsar time" with atomic time here on Earth. Among other results, the experiments have demonstrated the existence of gravitational waves, as predicted by Einstein's theory of gravity.