



FIGURE 1.1.

Aristotle

Universe was infinite and eternal, that it had no beginning. They expressed their conviction in a theory called the steady state or continuous creation theory. This theory held that the Universe had no beginning in space and time, but rather existed in a steady state condition with new matter being continuously formed from that which was already present. According to this theory, the Universe had just existed in this way throughout all time.

But science is a rather fluid discipline. Its great virtue is the ability to change or adjust its theories when new evidence is discovered. And new evidence began to accumulate as new telescopes and measuring instruments were used to probe the distant stars.

Astronomers found that stars are not distributed uniformly in space, but are grouped into more or less coherent units called galaxies. Most galaxies are composed of billions of stars. Galaxies are generally spiral in configuration, and rotate around a compact central region (see figure 1.2). They are thought to be held together by the force of gravitational attraction pulling inward and kept from collapsing by the centrifugal force of rotation pulling outward.

Our Solar System is located in one of the outer spiral arms of the Milky Way Galaxy and rotates around the nucleus of the galaxy, requiring 250 million years for a complete circuit. The presently observable Universe is thought to contain over 100 million galaxies.

FIGURE 1.2.

The Milky Way Galaxy. A top view and a cross section of this gigantic rotating disk of gas, dust, and stars.

