1998-1 Translation

1- They were, by far, the largest and most distant objects that scientists had ever detected: a strip of enormous cosmic clouds some 15 billion light-years from earth.

31) But even more important, it was the farthest that scientists had been able to look into the past, for what they were seeing were the patterns and structures that existed 15 billion years ago.

That was just about the moment that the universe was born.

What the researchers found was at once both amazing and expected: the US National Aeronautics and Space Administration's Cosmic Background Explorer satellite - Cobe - had discovered landmark evidence that the universe did in fact begin with the primeval explosion that has become known as the Big Bang (the theory that the universe originated in an explosion from a single mass of energy).

2- 32) The existence of the giant clouds was virtually required for the Big Bang, first put forward in the 1920s, to maintain its reign as the dominant explanation of the cosmos.

According to the theory, the universe burst into being as a submicroscopic, unimaginably dense knot of pure energy that flew outward in all directions, emitting radiation as it went, condensing into particles and then into atoms of gas.

Over billions of years, the gas was compressed by gravity into galaxies, stars, plants and eventually, even humans.

3- Cobe is designed to see just the biggest structures, but astronomers would like to see much smaller hot spots as well, the seeds of local objects like clusters and superclusters of galaxies.

They shouldn't have long to wait.

33) Astrophysicists working with ground-based detectors at the South Pole and balloon-borne instruments are closing in on such structures, and may report their findings soon.

4- 34) If the small hot spots look as expected, that will be a triumph for yet another scientific idea, a refinement of the Big Bang called the inflationary universe theory.

Inflation says that very early on, the universe expanded in size by more than a trillion trillion trillion trillionfold in much less than a second, propelled by a sort of antigravity.

35) Odd though it sounds, cosmic inflation is a scientifically plausible consequence of some respected ideas in elementary particle physics, and many astrophysicists have been convinced for the better part of a decade that it is true.