

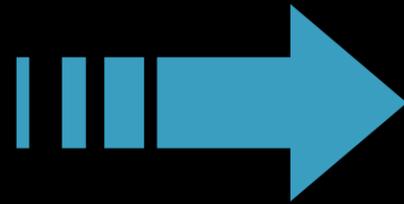


PATRICK MOORE ON...
The next 100 years
 in astronomy & space exploration

[What can we expect to happen in the coming century?]

Speculation can be dangerous, especially when science is at the mercy of power-drunk politicians. I have done my best here to indicate what I think may happen, provided that there are no more global wars. I may be wide of the mark in many cases, and, of course, we cannot control nature: who

knows when we may see the next supernova, or experience the outbreak of a volcanic eruption? Time will tell. Very few of my present readers will be here in 2107, but their children and grandchildren will – hopefully, this feature will ignite their imagination and vision of the future.



► A future base on the Moon could make a manned mission to Mars more viable



2007 Discovery of a Neptune-sized planet far beyond the Kuiper Belt. After heated discussion it is named Thanatos, after the mythological God of Death. Its discovery explains the Pioneer Anomaly, as well as the highly eccentric orbits of certain minor bodies such as Sedna.

2008 MACHOs investigated with new analytical equipment used on the VLT in Chile and the Subaru Telescope on Mauna Kea. MACHOs prove to be quark stars with extensive atmospheres; their densities are much higher than neutron stars, and they are very numerous. The VLT survey locates hundreds of MACHOs in our Galaxy and in the Magellanic Clouds.

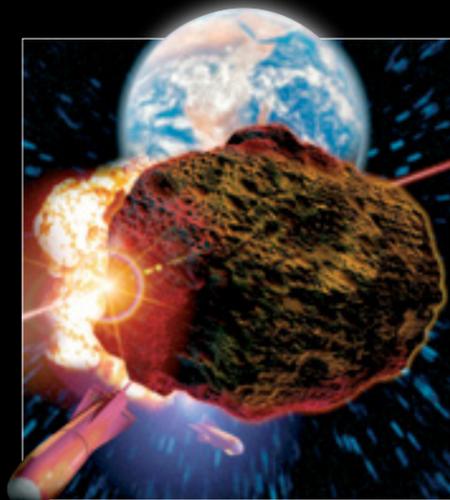
2010 Britain's newly-elected government looks at restoring the Royal Greenwich Observatory. Also this year, initial steps are taken in constructing the

Incredibly Large Telescope (ILT). A joint venture involving the European Southern Observatory, NASA, Japan and the Chinese Institute of Astronomy, ILT is the largest ground-based telescope yet.

2016 Preliminary lunar base set up in the Mare Frigoris, in preparation for permanent habitation; first medical centre established there. First radio telescope is set up on the far side of the Moon, where conditions are totally radio-quiet. It soon begins to identify quasars and starburst galaxies at distances of over 13.8 thousand million lightyears away from Earth.

2018 Completion of the ILT set up at the Fred Hoyle Observatory in Tibet. During final testing it identifies Earth-mass planets around the stars Epsilon Eridani and Delta Pavonis, providing direct images and showing that their atmospheres are oxygen-rich.

2019 Rho Cassiopeiae explodes as a hypernova and peaks at magnitude -8. X-ray emissions and neutrino showers are picked up by observatories on Earth, in space and on the Moon. A search for gravitational waves is initiated. In most northern-hemisphere observatories, routine

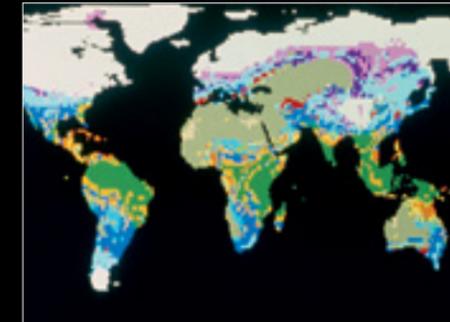


Missiles could be used to avert asteroid impact

work is suspended so that attention can be focused upon Rho Cassiopeiae.

2022 Gravitational waves detected. Theorists in London, Cambridge and Tokyo show that the acceleration of the expanding Universe is due to slight variations in the value of the gravitational constant, and that the present phase of expansion is likely to be succeeded by a period of contraction ending in what may be called a new Big Bang.

2028 Nuclear device exploded close to the asteroid Apophis, in order to divert the asteroid and prevent collision with the Earth in 2036. Though this experiment is successful, the future movements of Apophis



How the world could appear during an Ice Age

will be carefully monitored by the Lunar Observatory and by the VLT and ILT. Apophis seems to be a monolithic body, making it even more of a threat.

2033 First manned expedition to Mars; there is a controlled landing on Deimos (a natural space station) followed by the astronauts' descent to Mars itself in the Martian Module. Rovers Spirit and Opportunity found to be fully functional once given new batteries. Solar radiation levels are found to be tolerable.

2039 Onset of prolonged solar minimum with few sunspots or Coronal Mass Ejections (CMEs). This marks the final end of global warming on Earth. Theory predicts



One day there may be buildings like these in human settlements on the Moon and Mars

an interim period, followed by a phase of global cooling. Conditions similar to those of the Little Ice Age (1645-1715) are expected towards the end of the century.

2060 First major 'city' on Mars (Port Lowell) leads to plans for new settlements. Life is found in seas below the surface. The most advanced life forms resemble jellyfish that were common in Earth's oceans hundreds of millions of years ago. Tests show that the jellyfish are not poisonous; indeed, they are, in fact, edible.

2064 Manned landings on Halley's Comet at the time of perihelion. No bacteria are found, weakening the Hoyle theory of 'diseases from space'. Transmitters attached to the comet will allow tracking all around its orbit; recording devices will send back data about Kuiper Belt objects and the remote planet Thanatos, with its three known satellites.

2075 New settlement completed in the Hellas basin on Mars (Port Antoniadi), including an

observatory equipped with the ULT (Unbelievably Large Telescope). Martian scientists receive the first artificial signal from space found to come from a planet orbiting Epsilon Eridani. Attempts to interpret the signal are not successful. Reply sent.

2099 Space elevator completed and linked with the orbiting ACS (Arthur Clarke Station). Fossil fuels are now almost obsolete and monitoring by the ACS shows that atmospheric pollution has been dramatically reduced. It has also been shown that human activity actually had a negligible effect on climate change.

2107 Celebrations to mark the 150th anniversary of the start of the space age (4 October 1957 according to the Earth calendar) are followed by hostilities between the American Federation and the Sino-Japanese Confederacy. The crisis was sparked by a dispute regarding the issue of licences for mining rights of asteroids. Martian

colonists declare a UDI (Universal Declaration of Independence).
 ...and so to another
100 years!



▼ An artist's impression of what a future 'space elevator' may look like

US DEPARTMENT OF ENERGY/SPL; NASA/SPL; CHRISTIAN DARKIN/SPL; VICTOR HABBICK VISIONS/SPL; HULTON-DEUTSCH COLLECTION/CORBIS; US DEPARTMENT OF ENERGY/SPL