

India launches first indigenous nuclear submarine

India launched its first indigenous nuclear-powered submarine on July 26 from Visakhapatnam in Andhra Pradesh. India becomes the sixth country after the United States, Russia, China, France and Britain to possess a nuclear-powered submarine. Prime Minister Dr. Manmohan Singh said on the occasion: "Today's launch is a reflection of the immense technical expertise that exists in our country and the strength of our research and development organisations. More importantly, the launch represents the determination and patriotism of our technologists, scientists and defence personnel who have overcome several hurdles and barriers to enable the country to acquire self-reliance in the most advanced areas of defence technology."

Underlining that the sea had become increasingly relevant in the context of the country's security interests, Dr. Singh said: "We must re-adjust our military preparedness to this changing environment. Our Navy has a huge responsibility in this regard."

The Prime Minister spoke at the headquarters of the Indian Navy's Eastern Command in Visakhapatnam after his wife, Gursharan Kaur, conducted a brief ceremony to mark the launch of *INS Arihant*, a 6,000-tonne,

The submarine, 'INS Arihant', was built under the Advanced Technology Vessel project. Powered by a nuclear reactor, 'INS Arihant', literally meaning the 'destroyer of all enemies', that can stay below the water for indefinite periods

110-metre long and 11-metre wide submarine that can carry nearly 100 sailors.

The launch comes 25 years after the project was initiated when the Late Indira Gandhi was Prime Minister.

Describing the launch a "historic milestone", Dr. Singh congratulated the scientists and personnel associated with the project. "I am particularly glad that this submarine is the outcome of a productive public-private partnership. Private industry in India has evolved considerably during the last few decades and we should leverage its strengths to achieve our defence goals."

"The years of hard work, dedication

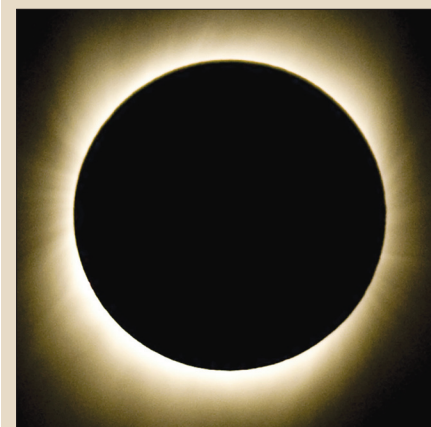
and perseverance that have gone into today's launch are an example worthy of emulation. They show that no task is difficult and that there is no greater power than the power of self-belief. I am confident that the lessons learnt from this launch will enable the ATV Programme to achieve even better results in the coming years," Dr. Singh added.

The Russian help in the project was profusely appreciated by the Prime Minister. "I would also like to express our appreciation to our Russian friends for their consistent and invaluable cooperation, which symbolises the close strategic partnership that we enjoy with Russia."

The dockyard where the submarine was housed was flooded before the vessel could be tugged out. Officials said it would take two years of sea trials before the vessel could be commissioned into the Navy. The submarine was built under the Advanced Technology Vessel project. Powered by a nuclear reactor, *INS Arihant*, literally meaning the 'destroyer of all enemies', that can stay below the water for indefinite periods.

Hailing the achievement, Defence Minister A.K. Antony said the "present situation in our neighbourhood" demanded greater acquisition of strategic assets.

Millions watch eclipsed sun rise over India



Faith merged seamlessly with the wonders of science as the devout and the curious gathered on rooftops, planetariums, riverbanks and open grounds to watch the longest solar eclipse of the century in India.

The world of pedantic textbooks came to spectacular life on July 22 as the morning sky darkened to night and the sun was reduced to a flaming rim of fire. Millions of Indians across the country watched the celestial play of moon and sun.

The eclipse was first seen at 5.28 am in Surat, Gujarat, in western India and last at 7.40 am in eastern Dibrugarh, Assam, in eastern India. The spectacle, marred by a cloud cover in many places, lasted six minutes and 44 seconds. The next time it will take place will be 123 years later in 2132.

The total solar eclipse was visible in places like Surat, Indore and Bhopal in Madhya Pradesh, Varanasi in Uttar Pradesh, Patna and Taregna in Bihar, and Guwahati in Assam. As the faithful congregated, so did the scientists, amateur astronomers, students and tourists at various places. Many in the village of Taregna, about 35 km from the Bihar capital of Patna, which was catapulted into the limelight after U.S. space agency NASA declared it the best place to watch eclipse.

Taregna has an ancient connection with astronomy, having been one of the two places used by 6th century Indian astronomer-mathematician Aryabhata for his celestial studies.

The Indian Air Force undertook aerial sorties to help Indian scientists study the phenomenon.

"The mission was a huge success. We got excellent footage of the eclipse," said Dr. Vinay B. Kamble, director, Vignyan Prasar.

For researchers at the Van Vihar national park in Madhya Pradesh, it was an opportunity to study animal behaviour.

"Birds especially depend on the sun for orientation and direction and they will be completely disoriented during the brief blackout (of total eclipse)," S.S. Rajput, director of the Van Vihar National Park, said.

India should take global climate change lead: British expert

India, which has a "strong new government and moral authority", should now lead global negotiations on climate change, a leading British expert has urged.

"India's low emissions and its challenge of poverty reduction give her moral authority on climate change. And with its strong new government and fine analysts, India is well-placed to take a lead in setting the agenda," said Nicholas Stern, chair of the Grantham Research Institute on Climate Change and Environment at the London School of Economics and Political Science.

Stern, who was delivering the 30th Jawaharlal Nehru Lecture at Chatham House, London, said India must take the lead ahead of a climate change summit in Copenhagen scheduled to be held in December.

The subject of the lecture, sponsored by Tata, was 'Climate Change, Internationalism and India in the 21st Century'.

"India has been viewed by many, in my view unfairly, as an obstacle to progress. Now is the time for India to move into the lead on international discussions," said Stern, who is also director of the India Observatory in the Asia Research Centre at the LSE.

India's role at the summit and in the runup to it will be "vital," Stern



said, adding: "There is no more important issue for the well-being of future generations in India and the rest of the world."

"India, because of its size, will be a crucial player in the global agreement. In these circumstances it is better to lead than to wait for others to propose," Stern observed.

Stern said India should make the following four demands upon the rich industrialised countries:

- ❖ Strong performance toward meeting their targets for 2020, 2025 and 2030, with reductions in greenhouse gas emissions of at least 80 percent by 2050 with a 1990 baseline;

- ❖ Financial support through the markets and elsewhere for actions taken in the developing world, and strong support in the battle against deforestation;

- ❖ The development of new green technologies, which should be shared with developing countries; and

- ❖ Substantial assistance to developing countries to help them adapt to the impact of climate change over the next few decades.

Stern added that the annual flow of finance from rich countries to the developed world should be in the region of \$200 billion per year by the 2020s.