

Professor D. Lal, Director, Physical Research Laboratory, Ahmedabad has been given the Federation of Indian Chambers of Commerce and Industry cash award for outstanding work in research and development and has been elected a Foreign Associate of the National Academy of Science (Washington).

Shanti Swarup Bhatnagar Prize of 1970 for Physical Science has been awarded to Dr. M. K. Vainu Bappu, Director, Indian Institute of Astrophysics, Kodaikanal, and of 1972 for Engineering Sciences to Professor G. Swarup, Tata Institute of Fundamental Research, Bombay.

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Finally, Oort's missing mass is found in the form of the presently still visible young M dwarfs, running down the Hayashi track, plus all the invisible degenerate black dwarfs.

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OSCILLATING TRANSIENT X-RAY SOURCE

X-ray sources have been known to appear in the sky, last for a few months and disappear below threshold of observability. Recently however, a transient X-ray source was observed in the Centaurus constellation, nicknamed Cen X-mas, which was above threshold of observability only for about 12 days. What makes it extremely interesting is that the emitted X-rays showed a periodicity of 6.75 minutes. These observations were made using Ariel V satellite (Eyles et al, *Nature*, **254**, 577, 1975; Ives et al, *Nature*, **254**, 578, 1975). The position of the source is right ascension $11^{\text{h}} 18^{\text{m}} 59^{\text{s}} \pm 13^{\text{s}}$ and declination $-61^{\circ} 35' 3 \pm 1''$. 8. A Mira-variable and an OB star are found in the error box defined above. The obvious explanation for the X-ray source is a binary system containing a neutron star and another star, the X-ray energy is being obtained by accretion of matter from the companion star onto the neutron star; The periodicity is, similar to the binary sources Her X-1 and Cen X-3, due to the rotation of the neutron star. It is suggested (Falriani et al, *Nature*, **255**, 208, 1975) that the transient nature arises due to the pulsation period of the Mira variable which has a periodicity in the range 100-300 days; the X-ray emission is above threshold only at a certain phase of the pulsation where matter emission can be higher. Apparao and Chitre (unpublished 1975) think that the 6.75 minute periodicity is somewhat like the solar cycle periodicity for a rotating magnetic white dwarf. White dwarfs are known to have convection zones and a poloidal field twisted to toroidal bundles due to differential rotation can float

to the surface to form 'star-spots'. Analogous to solar flares, magnetic field annihilation in the star-spots leads to emission of X-rays with the cycle periodicity impressed on it. The transient nature of the source can be explained by pushing the solar analogy further and suggesting that it shows similar high and low activity periods (the Sun has an 80 year high-low periodicity according to Kopcesky, *Bull. Ast. Inst. Czech.*, **13**, 240, 1963). Both the binary theory and solar cycle theory suggest that the transient source will reappear. The binary nature can be tested by looking for the expected Doppler effect.

The Ariel V satellite also found some nineteen new X-ray sources which were not there when an earlier X-ray satellite UHURU was surveying the sky. Also sixteen of the UHURU sources have 'disappeared' (*Nature*, **254**, 656, 1975). Thus it seems that there is a class of X-ray sources which are transient and if the solar cycle model is valid, many of them should show an oscillatory nature.

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ANNOUNCEMENT

An International Symposium on "Relativity and Unified Field Theory" will be held between December 1975—January 1976 at Satyendranath Bose Institute of Physical Sciences, University of Calcutta, 92 Acharya Prafulla Chandra Road, Calcutta 110 009, to mark the twentieth anniversary of significant contributions in the Unified Field Theory by late Professor S. N. Bose, the seventieth anniversary of Einstein's main paper on Special Theory of Relativity and sixtieth anniversary of the main paper on General Theory of Relativity. The participants are requested to send copies of their contributed papers, with an abstract, to Prof. M. Dutta of the Institute, so as to reach him on or before October 3, 1975.