

Brief Report on the

13th International Cosmic Ray Conference

The XIII Cosmic Ray Conference was held at Denver, U.S.A. during August 1973. Some aspects of astrophysical interest have already been reported in an earlier issue of the Bulletin. The charge composition of nuclei with charge greater than thirty received considerable interest. The composition observed more or less resembles that of universal abundances. This is somewhat surprising, because the relative enrichment of nuclei upto iron in cosmic rays compared to universal abundances does not seem to extend beyond iron. There was a flutter about discovery of trans-uranic elements in cosmic rays some years ago. At this conference it was stated that no evidence exists for the presence of trans-uranic elements in cosmic rays, though the charge spectrum extends upto uranium. The elucidation of the isotopic composition of cosmic rays received much attention. Though results about various isotopes of nuclei upto iron were reported, it seems considerable uncertainties exist in the techniques and the results cannot be taken seriously at this time.

One extremely interesting feature presented was the change in composition of cosmic rays with energy. This can be roughly represented by stating that the energy spectra of nuclei become flatter with increasing charge and that the energy spectra of secondary nuclei (not originally in the source, but produced by spallation in interstellar space) become steeper. This has been interpreted by some, as an effect due to cosmic rays spending some time trapped near their sources, before escaping into the galactic disc.

The gradient of low energy cosmic ray intensity was measured by spacecraft sent beyond 4 a.u. The results are not conclusive but show a small gradient of decreasing intensity towards the sun as expected. The gradient is however much smaller than expected and is leading to revision of existing models of solar modulation.

Gamma ray astronomy was highlighted at this Conference. There seems to be a source of 100 MeV gamma rays of only a few degrees wide at the galactic centre which seems somewhat difficult to understand in view of considerably larger width at other wavelengths. The gamma ray bursts reported earlier in this Bulletin were discussed extensively. The data presented indicated some definite directions from which they were arriving but no 'visible' source exists in this direction. The sun and the planets have been definitely excluded as sources of these bursts. Though there are some suggestions that they could arise from supernova explosion, the lack of any visual counterpart to the bursts casts doubt on this hypothesis. The accretion of discrete objects (comets!) onto neutron stars may lead to a sudden release of energy and may be the origin of the gamma ray bursts.

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ANNOUNCEMENTS

1. The Annual General Body Meeting of the Astronomical Society of India and the first Scientific Meeting of the Society will be held in the Department of Astronomy, Osmania University, Hyderabad on February 27th and 28th, 1974. Members who wish to read papers at the Scientific Meeting should send the titles and abstracts of their papers to the Secretary, Astronomical Society of India before January 31, 1974. Papers should be at most of 10 minutes duration.
2. In the absence of any contest, the following 3 persons, whose names had been nominated by members for the membership of the Nominating Committee (1974-75), are deemed to be elected for the same.
 1. Mr. V. Radhakrishnan, Director, Raman Research Institute, Bangalore-560006.
 2. Dr. S. K. Trehan, Department of Applied Mathematics, Punjab University, Chandigarh-160014.
 3. Dr. M. B. K. Sarma, Department of Astronomy, Osmania University, Hyderabad-500 007.
3. The new financial year of the Society starts on January 1, 1974. All members of the Astronomical Society of India are, therefore, requested to send their annual subscriptions to the Treasurer of the Society at the following address :

Dr. N. B. Sanwal
Department of Astronomy
Osmania University
HYDERABAD-500 007.

The subscription should be sent either by money order or by Bank Draft payable to Astronomical Society of India drawn on any Bank in Hyderabad.
4. Bulletin of the Astronomical Society of India is published quarterly. The annual subscription is Rs. 15.00 (domestic) and \$5.00 (foreign) for individuals, and Rs. 30.00 (domestic) and \$10.00 for institutions and libraries. It is distributed free to the members of the society.
5. The British Meteor society is willing to cooperate and exchange data with workers in the field of meteor astronomy in India. Interested persons are requested to contact Mr. R. A. Mackenzie, Director, British Meteor Society, 26, Adrian Street, Dover Kent, England CT 17 9AT.

ERRATUM

The caption to the cover photograph of the September 1973 issue of the Bulletin should read :

Lagoon nebula in Sagittarius (M8)
(U.P. State Observatory 104-cm reflector)

Editor