

conference, a few isolated unusually high multiplicity events have been reported from balloon-borne emulsion chamber experiments. A Japanese contribution at this conference has shown that most of these and other similar events can be understood in terms of the multi-chain model of nucleus-nucleus interactions without invoking QGP. Nevertheless, this is a very exciting area in which contributions can come only from cosmic ray experiments in the near future. Further investigations are, obviously, extremely important.

Search for proton decay, predicted by the grand unification theories, has been reported by several groups. The only positive results are from the Indo-Japanese collaboration working at Kolar Gold Fields and the Italian group working in the Mont Blanc tunnel. The Indo-Japanese group reported 3 candidate events, fully confined in their detector, one of which is

suggested to be of  $e^+ \pi^0$  mode. They argue that the probability that these events are due to neutrino interactions is very small and estimate a lifetime of  $10^{31}$  years for proton assuming them to be due to proton decay. The Italian group reported one confined event attributable to proton decay, which is consistent with the above lifetime. The Irvine-Michigan-Brookhaven collaboration from USA, using a water Cerenkov detector, which is sensitive to the  $e^+ \pi^0$  mode, however, has not seen any events attributable to proton decay, whereas about 10 events are expected with the above lifetime. Whether this discrepancy is due to the different types of detectors used in the different experiments or due to systematics in one of the experiments, is not clear. Results from other experiments are lower limits consistent with the above lifetime.

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## ANNOUNCEMENTS

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### THE INSTITUTE OF PHYSICS, LONDON

The Council of The Institute of Physics, 47, Belgrave Square, London SW1X 8QX, has made the following awards for 1984. The presentation of the awards will be made in London on 2 May 1984.

**Guthrie Medal and Prize** to Professor M J Seaton of the University College, London, for his many outstanding contributions to atomic and molecular physics, atmospheric physics and astrophysics.

**Glazebrook Medal and Prize** to Dr P E Trier of Philips Electronics Ltd, London, for his activities in organizing and encouraging research and development in the electronics industry as Director of the Mullard Research Laboratories and subsequently Director of R&D in the UK Philips Group.

**Duddell Medal and Prize** to Dr P G LeComber of the University of Dundee, for his outstanding work in the field of amorphous semiconductors.

**Rutherford Medal and Prize** to Professor P W Higgs

of the University of Edinburgh and Professor T W B Kibble of Imperial College of Science and Technology, London, jointly, for their contributions to theoretical elementary particle physics and particularly the concept of spontaneous symmetry breaking in gauge theories.

**Charles Vernon Boys' Prize** to Dr J Klein of the University of Cambridge and the Weizmann Institute, Rehovot, for his outstanding contributions to experimental macromolecular physics.

**Maxwell Medal and Prize** to Dr D W Bullett of the University of Bath, for his outstanding contributions to the theory of bonding in solids.

**Paterson Medal and Prize** to Dr I A Shanks of Unilever Research, Bedford, for his contributions to the applications of liquid crystals and his several inventions in the field of displays.

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