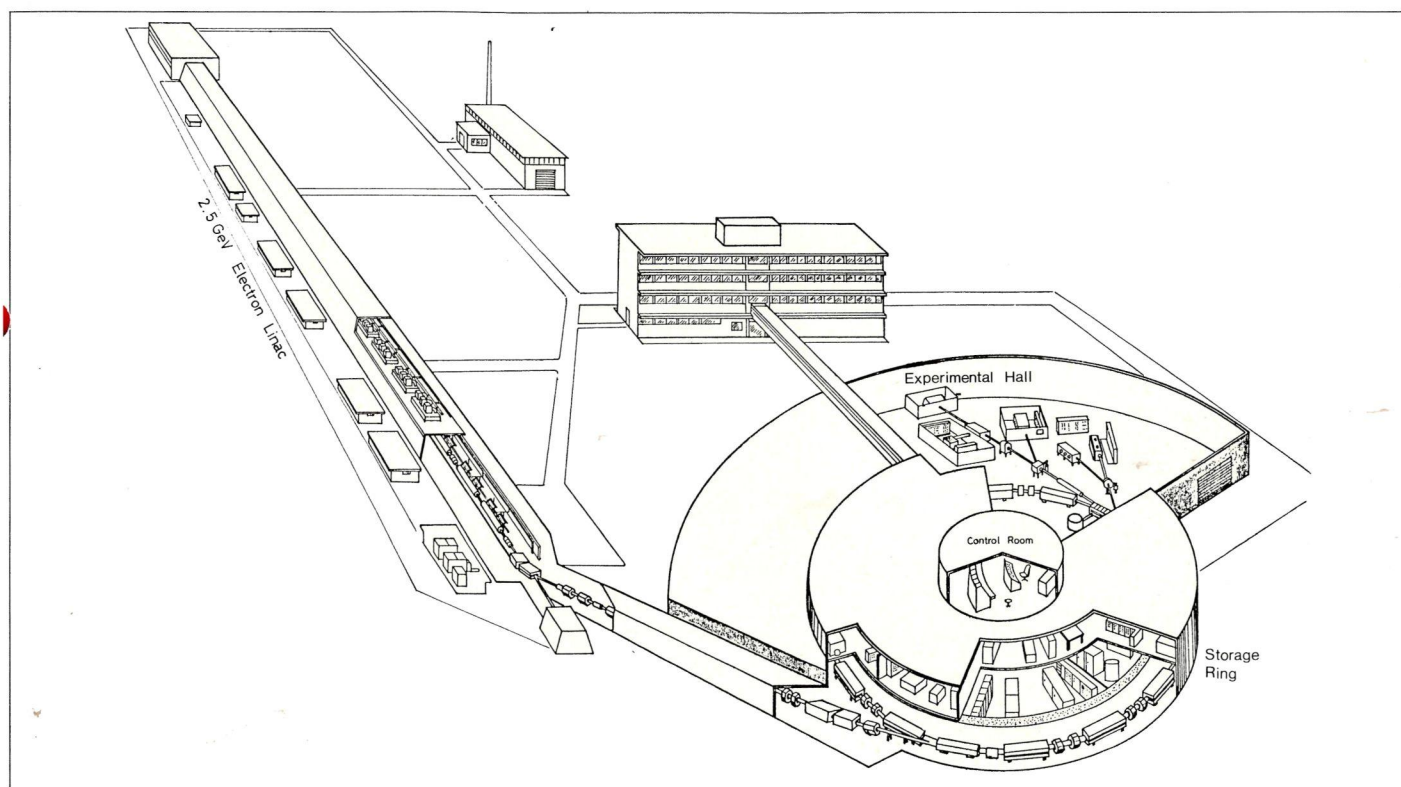


The proposed arrangement for the 'Photon Factory' — an electron storage ring for research with synchrotron radiation — to be built at the KEK Laboratory in Japan.



een beam ports (including two fed by 'wiggler' sections to give smaller wavelength radiation). The X-ray ring will follow later having thirty beam parts (including five 'wigglers').

The project, led by Arie van Steenberg, now involves about fifty people. Two committees have been set up to look at the research priorities of the user community and the costs that these will involve. An X-ray Committee is being chaired by T. Koetzle and VUV Committee by R. Holroyd. Martin Blume is the Users' Organization Coordinator and Morris Perlman Head of the Research Facilities Section.

SRFs in USSR

Since we already have two articles on synchrotron radiation research facilities this month (from Japan and Brook-

haven) it is a good time to add some notes on facilities in the Soviet Union. We were helped by a report of Herman Winick from the Stanford Synchrotron Radiation Laboratory who toured the USSR last Autumn.

A Synchrotron Radiation Commission has been set up chaired by Vitaly Goldanskii of the Moscow Institute of Chemical Physics with Sergei Kapitza of the Moscow Institute for Physical Problems as Vice-Chairman and Evgeny Kosarev of IPP as Secretary. Research is under way at two synchrotrons of the P.N. Lebedev Institute (a 1.2 GeV machine, Pakhra, about 35 km from Moscow, and a 680 MeV machine, Fian, in Moscow), at the Erevan 4.5 GeV synchrotron, Arus, in Armenia and at the storage rings of Novosibirsk. There are also facilities at Tomsk (the 1.3 GeV electron synchrotron) and at Kharkov where there is a 2 GeV linac and a 100 MeV storage ring.

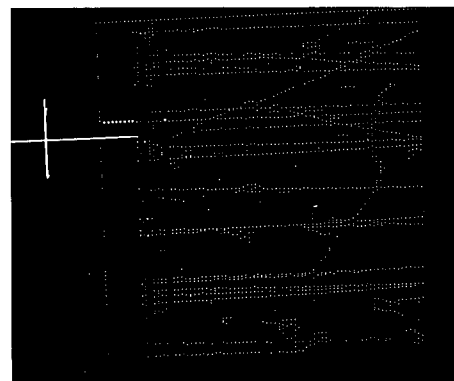
At Pakhra there is a single radiation beam line and a second is planned for a new experimental hall. Accelerated currents are around 10 mA and there are plans to increase this to over 1 A by using a 25-40 MeV racetrack microtron which is under construction as a new injector. They have put a lot of thought into the use of undulators to achieve radiation with special characteristics.

Fian was a scale model of the Dubna 10 GeV synchrophasotron. It now operates with currents up to 300 mA following the installation of a Tesla transformer, built at Novosibirsk, as injector. It has one beam line with five experimental stations.

At the Erevan Physics Institute (ERPI) the main research emphasis is in the field of high energy physics but the Director, I. Amatuni, is also very interested in synchrotron radiation research, which goes on in parallel plus about 100 hours of dedicated use a

The large ISIS detector constructed at Oxford University to be used for the identification of particles in the European Hybrid Spectrometer at the CERN SPS.

Direct display of signals from the wires reconstructing tracks passing through the detector ISIS which is undergoing tests on the Nimrod synchrotron at Rutherford. The tracks are produced by a beam passing 1.5 m from the signal wire plane. The detector, filled with an argon/20% carbon dioxide mixture, was being run at 100 kV (140 kV has been reached). The drift time was 75 μ s. Some low energy electrons were also observed.



surrounds them. The programme is encouraged by the interest of the Director, A. Skrinsky. Adding to the existing equipment, a superconducting wiggler is scheduled for installation in VEPP-3 very soon.

OXFORD/FERMILAB ISIS/CRISIS

A new type of particle detector, known as ISIS — Identification of Secondaries by Ionization Sampling, was proposed at Oxford University in 1974 (see April issue, page 128). An ISIS has now been built and is undergoing tests on Nimrod at the Rutherford Laboratory. First results look good.

ISIS is a variant of the drift chamber technique which adds the ability of identifying very high energy particles by taking a large number of samples of the ionization they leave in their wake. For the different types of particle of a given momentum, the ionization is slightly different (e.g. about 15% more for pions than kaons and 10% more for kaons than protons over a wide range of energies from about 5 to 100 GeV). Many samples have to be taken to avoid being confused by Landau fluctuations.

The tested detector (constructed at Oxford and moved for tests to Nimrod) encloses a large volume $4 \times 2 \times 1.5 \text{ m}^3$

year. The circulating current is 1.5 mA and there are two radiation beam lines. The machine has a 'wiggler' (built by Marzik Petrossian), which can produce fields of 1.8 T, and a beam line is being built to use the lower wavelength radiation which this will make possible.

ERPI also have plans for a storage ring (ERSINE) dedicated to synchrotron radiation research. The design group is led by Ivan Karabekov.

The ring is for up to 2.5 GeV electrons, injected at full energy from Arus, with circulating currents up to 0.75 A in a ring 13 m in diameter.

The synchrotron radiation facilities at the storage rings of the Novosibirsk Institute of Nuclear Physics have been covered in the COURIER pages before (see, for example, March 1977 issue, page 62). Three VEPP rings are in action and a large and growing research programme with good instrumentation