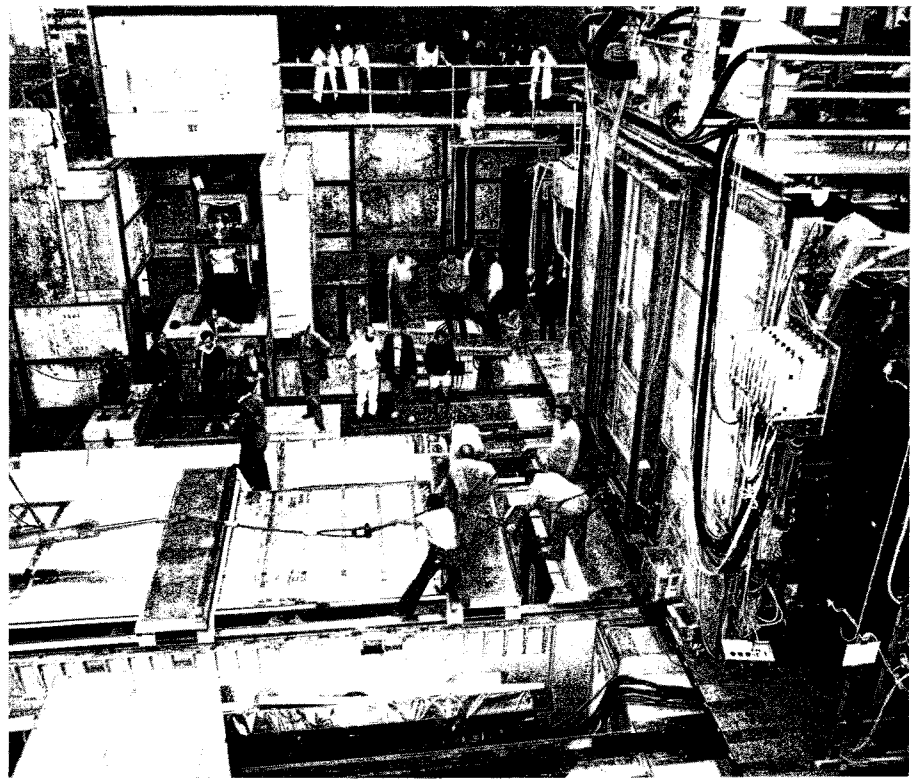
Seen here being reinstalled in the PETRA ring at DESY in 1981 is the PLUTO detector, which went on to amass important data from photon-photon collisions. This detector has had a long and illustrious career at both the DORIS and PETRA rings.

(Photo DESY)



trons. Development work established the optimal configuration of the focusing dynodes, and a prototype was developed in collaboration with Hamamatsu TV.

In this device, the secondary electrons, after amplification by the series of dynodes, are collected on a multianode arranged in a matrix array (see July/August 1980 issue, page 199).

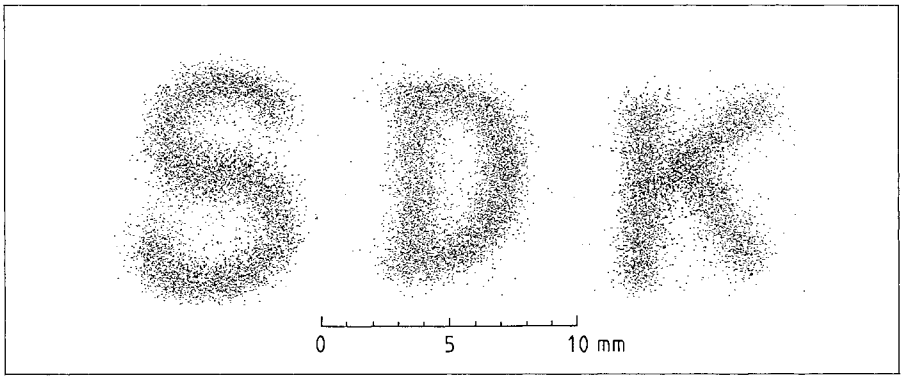
Using this device with 10 mm of scintillator, a prototype hodoscope has been constructed which is able to detect the position of particles in a dense 10 GeV pion beam (from the CERN PS) to better than 1 mm in two dimensions.

The pulse heights were recorded in an on-line computer and the position of the impact point calculated. Subsequent off-line analysis can further improve the recorded image quality.

A lens system has been devised to optimize the performance of the large aperture optics. This also gives the hodoscope the additional ability to 'zoom' up and down the beam. Possible improvements to the optics have also been demonstrated.

The device, with its technical simplicity and its use of the well established photomultiplier technique, appears to offer certain advantages over gaseous or solid-state detectors. For the future, a fast analog processor is being developed to extend real time calculation capability, and a more sophisticated unit, with a larger multianode, is also foreseen. Applications are foreseen in several areas of particle physics or medicine. For the latter, a hybrid system is being developed using the photomultiplier with an image intensifier so as to provide a larger sensitive surface.

An example of the resolution obtained with the hodoscope, using external defining scintillators in the shape of letters.



CONFERENCE
Photon-photon collisions

Despite being difficult to observe, photon-photon collisions have opened up a range of physics difficult, or even impossible, to access by other methods. The progress which has been made in this field was evident at the fifth international workshop on photon-photon collisions, held in Aachen from 13-16 April and attended by some 120 physicists.

The plenary morning sessions gave overviews of the ground covered since the Paris workshop two years ago. The substantial evolution of the field resulted in some lively afternoon discussion sessions, while in the experimental sessions 27 papers were presented, compared to seven at the Paris meeting.

The photons which collide are bremsstrahlung (radiation) from the circulating particles in electron-positron storage machines. To separate the photon collisions from direct electron-positron interactions, the outgoing electron and/or positron has to be detected, or the events identified by forward/backward missing energy.

The former method requires high electron detection efficiency close to the beam direction, while the latter requires good coverage for charged and neutral hadron detection.

At DESY, the eminent suitability of the PLUTO detector for this work was clearly demonstrated by its contributions to the workshop. It is a little saddening that PLUTO (after being active at the DORIS and PETRA electron-positron rings since 1974) is leaving no ideally equipped successor for two-photon physics. However first two-photon results from the detectors at the PEP ring indicate a very promising programme at SLAC.

Among the topics covered were two-photon production of meson resonances, of muon, hadron and proton-antiproton pairs, and of four charged pions, together with results on the photon structure function (a speciality of this field of physics).

Results from the JADE detector at PETRA provided interesting further information on the relative production levels of charged and neutral rho meson pairs in different charge combinations of four pions. The Crystal Ball detector showed some nice examples of light scattering (elastic photon-photon collisions) through an intermediate eta meson.

Good data on the total photon-photon cross-section looks difficult to come by, and the two-photon reaction may have limitations when used as a probe of quantum chromodynamics (theory of quarks and gluons) through the photon structure function.

On a lighter note, the choice of two possible afternoon excursions confronted the participants with a totally different problem, and provided another success for the organizers when all participants were convinced they made the correct choice!

(Report compiled from material kindly supplied by Egil Lillestol.)

Robert B. Palmer

People and things

On people

Robert B. Palmer has been appointed Associate Director for High Energy Physics at Brookhaven National Laboratory, and becomes responsible for the research programmes at the Alternating Gradient Synchrotron and the planned Colliding Beam Accelerator. He joined Brookhaven's Physics Department in 1960 and has played an important role in many of Brookhaven's research projects and physics discoveries, including the recent work on new superconducting magnets for use in particle accelerators.

Sharing the 1982 Enrico Fermi Award are Herbert L. Anderson of Los Alamos National Laboratory and Seth H. Neddermeyer of the University of Washington. Established in 1956, the Award is made only in those years when the selection committee deems the nominees to have made exceptional contributions to the field of atomic energy. Anderson was cited for 'his pioneering collaborations with Enrico Fermi in demonstrating the emission of neutrons in fission at Columbia University; for his essential role in constructing the first chain-reacting piles; for his work on the production and the determination of the properties of tritium and helium-3; for his collaboration with Fermi in detecting the first hadronic resonance at the University of Chicago; and for his continuing contributions to understanding the nature of strong and weak nuclear forces.' Neddermeyer was honoured for 'participating in the discovery of the positron; for his share in the discovery of the muon; for his invention of the im-