

# Extract from College Annual Report 1991 - 1992

## **Physicists measure by millionths**

QMW physicists contribute actively to the experimental and theoretical aspects of elementary particle physics. This involves collaboration with scientists worldwide, maintaining QMW's position at the subject's leading edge.

In collaboration with the UK semiconductor industry, physicists led by Professor Peter Kalmus have developed a technique to use silicon microstrip technology to measure charged particle trajectories to an accuracy of five-millionths of a metre. They have used

this technique at CERN (*the European Laboratory for Particle Physics*) to measure precisely the lifetimes of some rare particles which live for only a millionth of a millionth of a second, but which, boosted by relativity, travel a few millimetres before decaying.

A scintillation time-of-flight detector built at QMW was installed at the world's first and only proton-electron collider in Hamburg. This device was crucial in rejecting unwanted background, thus allowing the first measurement of several processes at energies much greater than before.

The Department of Physics installed its own beam of low energy antimatter particles, positrons, at less than one millionth of the CERN energy, for medical radiation physics, which may prove an interesting diagnostic technique for molecular electronics research.

