Notes provided by Professor Chris Ambidge

chris.ambidge@utoronto.ca
416 978 3106 / Wallberg Building 200 College Street, room 207

Hilger Polarimeter circa 1935 [images 3285, 3286, 3287]

This polarimeter was in use in the Chemical Engineering undergraduate laboratories until 1989. It looks somewhat like a telescope, and the end (left hand end in 3286) is pointed at a sodium discharge tube – this was the cheapest/most convenient form of monochromatic light [the D lines, 589nm]. A tube of solution to be measured (either 1 or 2dm long, with flat ends) was placed in the central trough and the sample lid closed. The operator looked through the central eyepiece (image 3285). They see a circular view, divided vertically into two half-moon shapes, which will have light of different intensity. The operator turns the large toothed wheel (behind the faceplate, visible in images 3286 and 3287) to adjust one of the half-moon images, until the two have apparently equal intensities of light. They then read the rotation through the left-hand eyepiece.

Schmidt Polarimeter 1914 or earlier [images 3275, 3282, 3292

This polarimeter was made by Franz Schmidt & Haensch, in Berlin, sometime before the first World War. It operates in much the same manner at the Hilger polarimeter above. The sample compartment is opened, and a 1dm or 2dm sample tube with test solution (usually of a sugar of some form) inside placed in the trough, and the end of the instrument pointed at a sodium discharge tube. The two polarimeters operated in the Chemical Engineering undergraduate labs until 1989, when the Na tube failed and they were replaced by modern instrumentation. Also as in the Hilger polarimeter, the operator looked through the centre eyepiece and adjusted the field of vision (two semicircles of light) until the two halves were apparently of equal intensity. The adjustment in this case was made by the knob at the bottom of the faceplate of the instrument, which in turn moves the outer ring of the faceplate, which is calibrated in 360degrees around the perimeter. When the operator wishes to take a reading, they look through either of the eyepieces (left or right) to see where the indicator ring has moved to. There are Vernier scales left and right to help with the accuracy of the reading.