16.2-05 USE OF A SLIT SYSTEM ON A DIFFRACTOMETER FOR DIAGNOSTIC TESTS. By A.McL. Mathieson, Division of Chemical Physics, CSIRO, P.O. Box 160, Clayton, Victoria, Australia 3168.

On a diffractometer, a slit system with a controlled aperture in front of the detector can provide valuable and direct information concerning essential experimental details - such as the size of the X-ray source, its spectral distribution, whether the specimen crystal is single-component and its effective mosaic spread.

Use of the slit system permits a quantitative display of the various possible scan procedures for the measurement of integrated intensity e.g. $\omega/2\theta$, ω/θ, ω, and indicates the appropriate choice for a given combination of parameters in practical cases. It allows valuable insight into the question of truncation and indicates the suitable choice of aperture.

The results obtained constitute a valuable guide to the handling of diffraction data from one- and two-dimensional detectors, as well as conventional one-point detectors.

16.3-01 REAL-TIME DIFFRACTION EXPERIMENTS USING A LOW-LIGHT TELEVISION COMPARATOR SYSTEM. By H.J.Milledge, M.J.Mendelssohn, E. Nave & P.A.Woods, Crystallography Unit, Geology Department, University College London, Gower St., London WC1E 6BT, England.

The real-time diffraction equipment based on a low-light television comparator system, of which the prototype was described at the XIth I.U.Cr. Congress (Milledge, Rood, Nave & Woods (1978) Acta Cryst. A34 S330) is now available commercially, and experience with the production model will be described.

In addition, a versatile sequencing device enabling time-dependent phenomena to be studied in detail has been designed and constructed, and experiments involving this device will also be reported.

A "setting jig" has also been constructed so that a crystal on arcs may be oriented by attaching flexible drives to the screws operating the arcs and traverses, and controlling these and the height adjustment and spindle rotation by means of stepping motors activated by a sprung-loaded key while watching the real-time diffraction pattern on a TV monitor. This jig operates very successfully.

Diffraction data can be accumulated on a storage tube for periods of up to about 30 minutes, and information obtained in this way is to be read into a PDP-11 computer for processing.

The current state of the complete system will be described.

16.3-02 SPATIAL SENSITIVITY OF SOME X-RAY DETECTORS By A. Dunand and H.D. Flack, Laboratoire de Cristallographie aux Rayons X, Université de Genève, 24, quai Ernest Ansermet, CH-1211 Geneva 4, Switzerland.

The uniformity of response across the detector area has been tested for three NaI(Tℓ) scintillation detectors as mounted on Philips PW1100 four-circle diffractometers. One detector was new (D1) while the other two were respectively five (D2) and eight (D3) years old.

The method used consists in scanning stepwise the working area of the detector with a reflected beam, 6° horizontally by incrementing 2Θ and 1.5° vertically by incrementing χ with the χ axis always coincident with the incident beam. A stationary crystal-stationary counter measurement is made at each step. The various sets of measurements at constant χ have to be put on a common scale to correct for the variation of the counting rates with χ.

The most striking result of the present experiment is to show the presence of a small area near the centre of the detector, where the sensitivity drops sharply by about 20%, in D1 (new detector!) and D3. The size of this spot is comparable with the area illuminated during an $\omega/2\Theta$ scan. Moreover, when the reflected beam falls on this less sensitive spot, an apparent shift towards lower energies of the pulse height distribution curve is produced. Whether this illustrates a general hardware problem with this particular make of detectors has yet to be investigated.

Except for this spot, the sensitivity is uniform in the new detector (D1) while it varies within an 8-10% range in the older detectors (D2 and D3). This indicates that ageing is still a major problem with NaI(Tℓ) scintillation detector units of this make.

16.3-03 MULTI-CHANNEL SSD SYSTEM. By Y. Nakano, T. Fukamachi, M. Yoshizawa, H. Kotani, H. Hirata, S. Hosoya and Y. Iitaka, Saitama Inst. Tech., Horiba Ltd. and Univ. of Tokyo, Japan.

A multichannel SSD has been made together with the necessary data acquisition system as shown below. This pilot detector has only five channels. Tentative data were taken for a pair of Friedel pair reflections. Such a system can be used to investigate anomalous scattering and its applications in a rapid way.