

in serum containing 8.8 g/100 ml of gamma globulin resulted in a residual protein content of 41, 38, and 85  $\mu\text{g/ml}$  respectively in the Dade, Sorvall, and Spectra machines and compares with a residue of 44  $\mu\text{g/ml}$  using standard manual techniques in 75  $\times$  12 mm size test tubes. A fourth red cell wash is practicable on the Dade and Sorvall machines but not with the Spectra.

No contamination by aerosol was found using a bacterial suspension of *Chromobacterium violaceum* on agar plates attached to the outsides of the machines. Bench contamination is possible from drips from the lid of the Dade and from a bowl drain of the Sorvall models.

**Interface for Coulter S Counters** M. G. NELSON (*Department of Pathology, Royal Victoria Hospital, Belfast*) In the Department of Haematology, Royal Victoria Hospital, Belfast, punch cards have been used since 1965 to process the laboratory data and a number of systems have been evaluated.

The present system involved the replacement of the multichannel analyser by a Coulter S, the development of an interface and the use of a computer to handle punch cards in an off-line batch mode. The specially designed silent interface with transistorized circuitry captures the output from the Coulter S, visualizes the results, automatically prints the data on a continuous paper roll, and transmits the information to a card punch unit located in a data processing room. Further requested test data and the PID are manually added to the punch card. The completed deck of cards is input on a dedicated laboratory computer to format

report documents, produce ward listings and quality control information. The laboratory data are stored for one month on a computer disc and the punch cards are retained as hard copy for one year. This system has been in routine daily use for almost two years and has proved both reliable and flexible. Many initial problems have been eliminated and the computer programmes have been debugged. The whole system has recently been improved by an advancement which interleaves batches of haematology cards onto the computer when it is being used 'on-line' by another laboratory department.

A stand alone 'Reporter 7' system which does not require computer facilities has been developed. The interface in this system has a solid state memory which permits the output of the Coulter S to be reproduced in duplicate by an IBM input/output writer on both a laboratory report slip and continuous stationery. This can then be used as both a worksheet and a storage document. The Reporter 7 embodies signals to indicate results which are 'out of range' and samples which require further dilution for leucocyte counting.

**Computer Linkage for Technicon SMA 4A** D. ROBERTSON SMITH (*Department of Pathology, Royal Berkshire Hospital, Reading*) At the Royal Berkshire Hospital, the Technicon SMA 4A analyser linked on-line to a digital PDP 12 computer as part of an automated haematological and biochemical laboratory. The method of operation for profile screening and routine work is described, together with the production of ward reports and cumulative reports.