sera are subjected. This test is mediated by the same antibody (IgG1) as that which fixes complement. Compulsory area eradication was started in November 1971 in three main areas (W. Scotland, NW England, SW Wales) and also in the Isle of Wight, and further extension areas have already been announced. This expanding programme, together with the third of herds already participating in the voluntary schemes, presents an encouraging picture for the eventual eradication of the disease.

Total Screening of Blood Donations for Australia (Hepatitis-associated) Antigen and its Antibody

J. WALLACE (*Law Hospital, Carlisle, Lanarkshire*)

During a continuous period of 16½ months all 147 636 donations were tested by immunoelectrophoresis (IEOP) for Australia antigen and its antibody. The number confirmed Au antigen-positive was 104, an incidence of 1 in 1 420. The figures for antibody positive were 82 and 1 in 1 800. Taking only 90 099 first donations, 103 or 1 in 874 were positive for antigen, and 79 or 1 in 1 140 positive for antibody. Thus with rare exceptions donors who were seronegative at the first donation have remained negative at subsequent donations.

The exceptions were four donors, one of whom was found to be antigen positive, and three antibody positive at their second donations. The three antibodies were weak and may have been missed at the original test. These three donors and the recipients of their first donations did not suffer from overt hepatitis. The recipient of the first donation of the donor, who was antigen positive at his second donation, developed Au antigen-positive hepatitis. This donor had a strong Au antigen, but no history of hepatitis. Antigen excess at the time of the original test may have caused a false negative reaction.

To date seven cases of Au-positive hepatitis have been reported among recipients of apparently Au-negative blood. All the donors involved have been reexamined. Two have been found to be Au antigen positive. One was the strong antigen previously mentioned; the other was a weak antigen probably missed at the original test. In the remaining five cases all donors were negative when tested by the techniques of IEOP, immunodiffusion, and complement fixation using a chequer

board titration system. The negative results in these five cases suggest either that a very weak example of Au antigen was present in an original donation, or that there was another portal of entry for the infective agent.

With the exception of one donor who developed acute hepatitis two weeks after donation, and in whom Au antigenaemia was transient, all the positive reactors have remained clinically well and either the antigen or antibody has persisted. The incidence of Au antigenaemia is 1 in 153 in male prisoners, 1 in 803 in non-institutionalized male donors, and 1 in 2019 in female donors. The differences between these groups are statistically significant for Au antigen, but not for Au antibody.

Quality Control in a Chemical Pathology Laboratory

A. JORDAN, J. M. BENTON, R. M. JAMES, AND P. A. MACDONALD (*Royal Infirmary, Sheffield*)

These authors described briefly the Sheffield regional quality control scheme as it affected them and pointed out the need for all laboratories to know the standard deviation of every method in use in the laboratory. This was made very much easier by using the range technique. If the standard deviation be known it is possible to know whether a systematic error is present on a single determination on a specimen in a national quality control scheme. The authors emphasized the importance of all laboratories keeping a record of gross errors.

Investigation of the Role of Pancreatic Trypsin in Ulcerative Colitis

D. M. GOLDBERG (*The Royal Hospital, Sheffield*)

Trypsin has been shown to be an important aetiological factor in the genesis of certain forms of experimental intestinal damage in animals (Bounous, 1967, 1970). Large amounts of active trypsin reach the terminal ileum of man and are subsequently inactivated by trypsin inhibitors of colonic mucosal epithelium (Goldberg, Campbell, and Roy, 1969, 1971). It therefore seemed appropriate to determine whether an abnormality of trypsin or its inhibitor could be detected in patients with ulcerative colitis.

The output of trypsin was determined in 26 patients with ulcerative colitis and eight with polyposis coli, each of whom had

undergone total colectomy and ileostomy. Measurements were made in each subject over periods ranging from three to eight days on a standard diet. Trypsin output was lower in the group with ulcerative colitis, but serial postoperative measurements suggested that this was due to the relatively poorer nutritional status of patients in this group, and no consistent difference was apparent between individuals in both groups whose ileostomy had been established more than one year before the measurements were made.

The activity of trypsin inhibitors was determined in 20 samples of colonic mucosa obtained from patients with ulcerative colitis and 18 samples of histologically normal colonic mucosa from patients with carcinoma of the colon. Higher levels were found in mucosa affected by ulcerative colitis, there being an apparent correlation between inhibitor level and the severity of the lesion as assessed by the extent of ulceration, necrosis, and haemorrhage.

The data do not support the view that a high intraluminal concentration of trypsin, or a reduced cellular protection against its action, are primary or secondary causes of mucosal damage in ulcerative colitis.

References

- Bounous, G. (1967). *Amer. J. Surg.*, **114**, 368.
- Bounous, G. (1970). *Amer. J. Surg.*, **119**, 264.
- Goldberg, D. M., Campbell, R., and Roy, A. D. (1969). *Gut*, **10**, 477.
- Goldberg, D. M., Campbell, R., and Roy, A. D. (1971). *Comp. Biochem. Physiol.*, **38B**, 697.

Haematological Population Screening in the Elderly

N. K. SHINTON (*Coventry and Warwickshire Hospital, Coventry*) AND P. C. ELWOOD (*MRC Epidemiology Unit, Cardiff*)

An epidemiological survey has been conducted in subjects of 65 years and over, resident in Coventry, and compared with similar surveys in a mining valley and a seaside town in South Wales. The subjects in the Coventry group were 87 Asian immigrants, 221 'English', and the 'Welsh' group 293 from the valley and 240 from the town. The haematological data included levels of haemoglobin, red cell values, serum vitamin B₁₂, serum, and red cell folate.

Haemoglobin levels showed a wider scatter in the Asian males than in the other groups but otherwise there was no difference found. The overall incidence of anaemia, taking an arbitrary 12 g/100 ml

as the lower limit of normal, was less than 5%. The type of anaemia was mostly microcytic and followed the usual distribution seen in hospital practice. The mean levels of serum vitamin B₁₂ were lowest in the Asian males and females, 40% and 32% respectively being below 150 pg/ml, and the Welsh means were lower than the English. In no subject was a low level associated with macrocytic anaemia. Serum folate levels showed differences between groups, the Welsh of both sexes having significantly higher means and the Asians the lowest. The red cell folates were also significantly lowest in the Asian females, 27% having a level below 150 ng/ml and 54% below 200 ng/ml. There was no correlation between either the serum or red cell folate with mean red cell volume.

It was concluded that while there was evidence of impaired nutrition in the Asian population of Coventry, the low incidence of anaemia in the survey indicated that haematological population screening of the elderly, apart from epidemiological studies, was of doubtful economic value.

Experience with Further Mechanization of Walthers' T₃ Sephadex Uptake Ratio Method

J. ENTICKNAP (*Whipps Cross Hospital, London*)

This method of assessing thyroid function by uptake of ¹²⁵I T₃ added to serum on Sephadex G25 is now used for weekly batches of 30 tests. It has been simplified to six steps by omitting preswelling of beads and the third washing. The turntable of an automatic counter holds polystyrene tubes for all steps of the test and automatic dilution and printout of count rates are employed. None of these changes has affected the results.

Duplicate tests on different days give a correlation of 0.93 with mean difference of 0.008 or of 0.15 allowing for significance. The 95% percentile range is now 0.75 to 1.25 with log-normal distribution. Two hundred and sixty-nine clinical tests in two months compared with PBI, clinical impression, and serum cholesterol gave a firm diagnosis in 203 and 33 were modified by treatment. In the remaining 33 equivocal cases the SUR was more helpful in 17 and the PBI in 15. Each test had an individual error rate of 8%. When combined in a free thyroxine index this was reduced to 5% and to only 2% in dysthyroidism. False positive results are

thus fairly common. On these numbers the test saves about £500 pa and one technician-day per month when compared with reagent kits.

The Implications of SI Units in Haematology

N. K. SHINTON (*Coventry and Warwickshire Hospital, Coventry*)

The introduction of SI units to haematology will involve changes of symbols, change in expressing numerical value which retains previous proportion, and change of unit resulting in change of numerical value. Haemoglobin may either be reported as mass concentration (g/l) or molar concentration (mmol/l). The former is being recommended by the British Society for Haematology (BSH) as this change in numerical order only is less likely to cause confusion due to unfamiliarity which could lead to lethal misunderstanding. The BSH for similar reasons also recommend that albumin and fibrinogen be reported as mass concentration (g/l). Red cell, white cell, and platelet counts should be reported as the number per litre of whole blood and the packed cell volume (PCV) as volume per litre (l/l). The mean red cell volume (MCV) would be in fl, the mean corpuscular haemoglobin (MCH) in pg, and the mean corpuscular haemoglobin concentration (MCHC) in g/l. Serum iron, siderophyllin, vitamin B₁₂, folate and red cell folate would be in moles per litre using the appropriate prefix. Measurements in coagulation would remain unchanged. These proposals are subject to agreement with the International Committee for Standardization in Haematology which is meeting in September 1972.

The Implications of SI Units in Chemical Pathology

P. F. J. SEWELL (*Doncaster Royal Infirmary, Doncaster*)

SI units are a coherent system founded on the metric concept, but using only seven base units from which all other units are derived through a simple mathematical relationship. SI units have been promoted by the General Congress of Weights and Measures (CGPM) to which most national governments subscribe.

Three base units (metre, second, and kelvin) have absolute values assigned by measurements of specified properties of matter. The remaining four (kilograms,

ampere, mole and candela) have values directly or indirectly derived from the mass of the unique standard kilogramme. The mole (amount of substance) is the base unit for chemistry: if a decision were taken to specify the exact number of particles in the mole it would no longer, in theory, be necessary to preserve the unique standard kilogramme and hence all the SI units could have absolute values.

Clinical chemistry is now a mature discipline closely linked to analytical and physical chemistry and to molecular biology, as well as to medicine. Collaboration between the International Federation of Clinical Chemistry and the International Unions of Pure and Applied Chemistry and Physics has resulted in agreement with the International Standards Organization (which advises the CGPM) on the application of SI units in the relevant fields. Medical physicists, specialists in clinical measurement, and anaesthetists have generally shown awareness of the need to conform. A multidisciplinary working party is at present trying to reach an agreement on how and when SI units should be introduced in British hospitals.

Meantime, hospitals in several European countries, and many international journals, have already made the change, and SI has been adopted by most British schools and universities.

Cellular Response in Skin Windows in Hodgkin's Disease and Allied Disorders

G. HUDSON AND E. K. BLACKBURN (*University of Sheffield*) AND M. L. GHOSH (*St Helen's Hospital, Barnsley*)

The cellular response in malignant lymphoma has been investigated by a modification of the method of Rebuck and Crowley (*Ann. N.Y. Acad. Sci.*, 69, 1955). After removal of the surface epithelium over a small area of the forearm, a sterile coverslip was left in place for 24 or 48 hours and then removed and stained. Forty-five cases have so far been studied in detail. The general pattern was similar in all cases, with over 90% of the cells being macrophages; neutrophils, eosinophils, basophils, and lymphocytes were present in smaller numbers.

In malignant lymphoma the macrophages appeared to show less phagocytic activity than normal and significantly fewer contained pigment particles. The percentage of macrophages containing cell fragments and vacuoles was also significantly less in sarcoma. Counts from