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

the same patient were consistent when repeated. In comparison with the macrophages in Hodgkin's disease, those in sarcoma showed significantly more multinucleated forms and the maximum number of nuclei seen in a single cell was higher. In a single patient with lymphosarcoma, macrophage mitosis was noted, but has not been found in any other patient even when colcemid has been applied locally.

These changes may suggest a disordered cellular response.

Serum Creatine Phosphokinase Changes in Psychotic Illness

G. OWEN, R. GOSLING, AND R. J. KERRY
(Northern General Hospital, Sheffield)

Increased serum creatine phosphokinase (CPK) levels have been reported in acutely psychotic patients. This study examined the proportion of psychotic and non-psychotic patients showing raised serum CPK activity. This occurred in about half of the patients with psychotic illnesses but was absent in the non-psychotic patients. Raised serum CPK was significantly associated with second order factor score patterns on the Inpatient Multiphasic Psychiatric Scale (IMPS) suggesting that mania and paranoid schizophrenia were more involved with this enzyme change than depression and non-paranoid schizophrenia.

Raised serum CPK suggests that psychotic illness may be present. If a patient is found to have an increased level of CPK, in the absence of organic illness, further psychiatric investigation is required. Increased CPK activity may precede the clinical manifestations of the psychotic illness by a few days. This has been seen in the symptom-free outpatients with a raised CPK who have been admitted to hospital a few days later with acute psychotic illness. Creatine phosphokinase estimation would appear to be a worthwhile screening procedure for both inpatients and outpatients. Patients with raised CPK need continued psychiatric supervision.

The Incidence of Syphilis in Thailand

P. SONGHAPRASERT, B. RUNGPITARANGSI, AND S. PHANSOMBOON (Siriraj Hospital, Bangkok, Thailand)

Serological investigations for syphilis, carried out on specimens collected as a routine from Bangkok hospital out-

patients, gave positive results in 7.1% of cases. This suggests the high incidence of syphilis of 7100 per 100000 population.

Management of Cases of Myelomatosis

E. WILSHAW (Royal Marsden Hospital, London)

The malignant proliferation of plasma cells exposes a patient to certain hazards which must be dealt with adequately if he is to benefit from any remission achieved by chemotherapy.

BONE LESIONS

Solitary filling defects are best treated with large doses of radiotherapy with a view to cure. Large osteolytic areas in limbs should be supported by pinning since recalcification of myelomatosis lesions is very rare. Paraplegia must be treated early, preferably by laminectomy followed by radiotherapy. Hypercalcaemia is treated with prednisone and neutral phosphate together with alkylating agents. Patients should be mobilized as soon as possible.

PARAPROTEIN PRODUCTION

Hyperviscosity can be alleviated temporarily by plasmaphoresis while giving time for the alkylating agents to reduce the mass of myeloma. Amyloid deposition is irreversible but the carpal tunnel syndrome can be relieved by surgical excision of the retinaculum.

BONE MARROW FUNCTION

The ability to make normal numbers of erythrocytes, leucocytes, and platelets can be restored by alkylating agents provided that the treatment is given persistently. Rises in haemoglobin may be seen only when treatment has been given for a year.

Factors of Prognostic Significance in Myelomatosis

R. PETO (Radcliffe Infirmary, Oxford)

In 1964 the MRC initiated a clinical trial which compared two protocols for the treatment of myelomatosis. Nearly 300 patients were notified by 1968, and by 1971 all these patients had been at risk for at least three years. Because the protocols proved therapeutically identical, this series was ideal for assessing the influence on subsequent prognosis of the initial condition of a myelomatosis patient. Features such as hypercalcaemia, which are corrected by the MRC protocol, do not appear in this series to influence prognosis. Conversely, renal failure is ir-

relevant to the neoplastic disease but, being irreversible by the MRC protocols, dominates prognosis so strongly that a patient presenting with a blood urea above 80 mg/100 ml is likely to be dead within two months, whereas one presenting with a blood urea below 40 mg/100 ml is likely to live over three years. To study the actual myeloma we therefore need to find what, given the effect of renal failure on prognosis, is the effect on prognosis of the various biochemical, histological, haematological, and radiological measurements made in the MRC trial as the patients were notified. We found to our surprise that although many measurements were abnormal, few of these abnormalities mattered. None of the radiological, histological, haematological (other than anaemia), or biochemical (other than hypoalbuminaemia) measurements mattered at all (except insofar as they correlated with renal failure), and the series is so large that this is quite a definite conclusion. We do not really know why anaemia matters. Perhaps it is a measure of marrow displacement, but then why do low platelet or neutrophil counts not matter at all? We have still less idea why hypoalbuminaemia matters. In experimental animals, some tumours can concentrate labelled albumin in them and cause hypoalbuminaemia, so perhaps the more active myelomas catabolize circulating albumin.

The Clinical Significance of Bence Jones Proteinuria

H. MCLAUGHLIN (Westminster Hospital Medical School, London)

Bence Jones protein is monoclonal light chain, found in the urine because of its low molecular weight (22 000). Monoclonality is demonstrated by cellulose acetate electrophoresis of concentrated urine in parallel with serum. Immunoelectrophoresis will identify the type of L chain involved. Free light chain will react with its corresponding antiserum across 3 mm agar within two hours, light chain bound to IgG takes three hours, and that bound to IgM eight to 12 hours.

Concentration of urine up to $\times 300$ is essential to exclude low levels of Bence Jones protein and this is best done by vacuum dialysis in collodion thimbles of urine, initially passed through 1.0 μ and 0.2 μ filters to remove bacteria.

The Table shows the results when this technique was used in 1159 cases of various disorders.