Gestogram—new standard perinatal growth chart. Peter Dunn (*Department of Child Health, Southmead Hospital, Bristol*). Broad agreement has been reached at an international level during the past year with respect to the way in which infants should be classified at birth according to either their weight or gestational age. There remains an urgent need for agreement on a fetal or perinatal growth chart combining both these parameters. The gestogram is a new chart based on the concept of a 'normal' infant perinatal growth velocity, and is both versatile in function and simple to use.

Assessment of gestational age in white and non-white infants. Lilly Dubowitz (*introduced by Victor Dubowitz*) (*Children's Hospital, Western Bank, Sheffield*). A 'maturity' score based on external and neurological characteristics was applied to 45 white and 44 non-white infants with certain dates in Cape Town. The results were compared with results obtained on 167 white infants by the same observer in Sheffield.

The results have shown that the method can be applied to a non-white population. However, when the Cape Town white and non-white infants were matched for weight and gestation with the Sheffield white infants, and the scores obtained by the same observer were compared, the neurological scores, and hence the total score, were found to be significantly higher in the Cape Town non-white population, but not in the white population. It is concluded that the method is applicable for different racial groups but that the regression line should be restandardized for each group.

Development of components of motor skill in childhood. Lewis Rosenbloom (*introduced by Kenneth Holt*) (*Wolfson Centre, London*). In attempting to describe the development of skill on movement, attention is normally paid to the speed and accuracy with which individual motor tasks are accomplished.

However, it is possible to define motor skill more comprehensively as being 'appropriate use of movement, together with appropriate use of effort, together with consistency of performance'. An observational study on 58 normal children aged between 2 and 5 years was described. They were seen in a structured situation in which the development of components of their skill in performing a motor task could be recorded.

It was shown that some of these components were consistently acquired earlier than others. The physiological basis for this, and its significance for the management of children with motor handicaps, were discussed.

Respiratory mechanics in infants of low birth-weight. Elizabeth A. Feather and George Russell (*Department of Child Health, University of Aberdeen*). Using a standardized technique, respiratory mechanics were studied in infants of low birthweight (<2500 g). The results in preterm (PT) infants were compared with those in light-for-dates (LFD) infants, and it was found that in the fasting state work of breathing was greater in PT than LFD infants. After feeding the situation was reversed, total work of breathing being

slightly higher in LFD than PT infants. These changes which were statistically significant were due almost entirely to an increase in viscous work, there being no significant change in elastic work, pulmonary compliance respiratory rate, or minute volume. The changes did not appear to be related to birthweight or to size of feed, and are attributed to the difference in gestational age between the two groups.

Observations on use of sodium bicarbonate in asphyxiated infants with particular reference to changes in blood gases, heart rate, haematocrit, lower aortic blood pressure, and serum electrolyte values. Hamish Simpson (*Department of Child Life and Health, University of Edinburgh*).

Serum lipids during first four months of life. Judith Darmady (*introduced by June Lloyd*) (*Institute of Child Health, London*). Familial hypercholesterolaemia is associated with an increased risk of death from cardiac infarction in early adult life, and if preventive measures are to be effective the condition should be diagnosed as early as possible. In two infants, who were later shown to have the heterozygous form of familial hypercholesterolaemia, cord serum cholesterol concentrations were 101 mg/100 ml and 102 mg/100 ml, compared with mean normal values of about 75 mg/100 ml. Because there is little information on normal values for serum cholesterol during the first year of life, and because the relation between the levels in cord blood and the values subsequently achieved in individual children is not known, a prospective study of serum lipid concentrations during the first year has been started. About 260 babies have so far been followed up to the age of 4 months: 37 had cord serum cholesterol concentrations greater than 100 mg/100 ml, and in 7 babies the levels were greater than 120 mg/100 ml. Repeat observation at the age of 6 days, 6 weeks, and 4 months showed no correlation between the cord serum cholesterol and the subsequent values. At the age of 6 weeks the nature of the milk fed has a significant influence on the serum cholesterol level, babies being fed on 'SMA' having the lowest mean levels (129 mg/100 ml), and those receiving breast milk, the highest levels (175 mg/100 ml). At the age of 4 months, 15 infants had cholesterol levels over 240 mg/100 ml, and in 2 the values were over 300 mg/100 ml. Further follow-up will be required in order to assess the significance of these observations.

Radiological changes in acute renal papillary necrosis. Tony Risdon (*introduced by Colin Berry*) (*Hospital for Sick Children, Great Ormond Street, London W.C.1*). Recently we have encountered 3 infants with unusual radiological changes in the intravenous pyelogram which was performed during investigation of renal insufficiency after severe acute gastroenteritis. In all 3, intravenous urography revealed abnormal, prolonged opacification of the renal pyramids, and a persistent nephrogram. In 2 of these infants, repeat urograms some months later showed loss of the

renal papillae, suggesting that the original radiological changes were due to acute renal papillary necrosis. Exactly similar urographic changes were seen in rats in which renal papillary necrosis was induced experimentally by injection with ethyleneimine.

Systolic blood pressure measurement in newborn with transcutaneous doppler. Rebecca Kirkland (*introduced by Leo Stimmler*) (*Department of Paediatrics, Guy's Hospital, London*). Blood pressure determinations have been obtained in neonates with a transcutaneous Doppler apparatus. The instrument operates on the principle of the Doppler effect. 56 neonates at Guy's Hospital were studied to establish normal systolic blood pressure values for this technique. Comparisons were made with measurements obtained by other methods. The results indicate that the transcutaneous Doppler apparatus provides a rapid and accurate method for measuring blood pressures in infants.

Growth hormone levels with exercise. John Buckler (*introduced by Dick Smithells*) (*Department of Paediatrics and Child Health, 27 Blundell Street, Leeds*). Exercise has been shown by many workers to be a stimulus to growth hormone release. This effect is more obvious in women than in men, and women also show greater responses to many other stimuli and more frequent spontaneous fluctuations in serum growth hormone levels. Exercise studies have, therefore, been conducted in a normal healthy man (aged 35 years) in whom the effect of other influences on growth

hormone output during the experiments could be considered to be minimal.

Exercise was performed on a cycle ergometer and serum growth hormone levels were estimated on blood samples taken by indwelling intravenous needle during the course of the exercise and the subsequent hour. The subject was fasted and the studies were started about 9.30 a.m. on different days with a standardized experimental procedure, to compare the effect of different degrees and duration of exercise.

Serum growth hormone levels started to rise about 10 minutes after extreme exercise of short duration, and reached a high peak about 25 minutes after the start of the exercise. However, with mild continuous exercise, no rise in serum growth hormone levels was found for over 40 minutes but then a gradual progressive rise ensued as long as the exercise continued (e.g. 2 hours) but the values instantly started to fall when exercise was stopped. Degrees of exercise between these extremes produced intermediate responses in growth hormone output, but if moderate exercise of sufficient severity was continued for long enough, a plateau in the serum growth hormone levels resulted which was maintained until the exercise ceased.

These findings suggest that the output of growth hormone is dependent on some effect of exercise which is cumulative. This factor needs to reach a critical level for growth hormone response to be initiated, and the magnitude of the ultimate response and the speed at which it is achieved are dependent on the severity of the exercise.