Depressed lymphocyte response to phytohaemagglutinin in pregnant women and newborn infants. V. Y. H. Yu, C. Waller, I. C. M. MacLennan, and J. D. Baum. John Radcliffe Hospital, Headington, Oxford.

The process by which cell-mediated immunity is reduced in pregnancy is uncertain. Reports on the response of newborn lymphocytes to phytohaemagglutinin (PHA) are conflicting. We have studied the response to PHA of paired maternal and newborn lymphocytes obtained initially at the time of delivery and subsequently 7 days later. In order to confirm the presence of an inhibitory plasma factor, we compared the PHA responses of maternal and newborn lymphocytes cultured in the presence of their own plasma with that after washing and resuspension in fetal bovine serum. The lymphocyte mitotic response was assessed by measuring the rate of ^{125}I -5-iodo-2'-deoxyuridine uptake into DNA. Our findings suggest that the reduced lymphocyte response to PHA in pregnancy is due to a plasma inhibitory factor. However, its action was not demonstrable in maternal blood taken 7 days after delivery.

DNA synthesis in unstimulated cultures from newborn infants at birth and at 7 days was significantly greater than that of adult controls. With PHA stimulation, the response of cord blood lymphocytes paralleled that of adult controls when cultured in their own plasma, but washed newborn cells showed significantly greater responses. Therefore plasma suppression similar to that observed in mothers also appears to affect infants at birth. This inhibition was not demonstrable in blood taken from infants 7 days old. The nature and source of this inhibitory factor is open to speculation and further studies are required to clarify its role in the survival of the fetal allograft in human pregnancy.

Serum IgG levels in feto-fetal transfusion syndrome. E. Bryan and B. Slavin. Departments of Paediatrics, Neonatal Medicine, Chemical Pathology, Hammersmith Hospital, London. *Archives*, 1974, **49**, 908.

Closing volumes in childhood. A. A. Kerr (introduced by E. Hey). The Hospital for Sick Children, Great Ormond Street, London.

Most common diseases which primarily affect the bronchi alter the resistance in the small airways initially. Because these airways contribute only a small fraction to the total pulmonary resistance, disease must be widespread before it can be detected with conventional spirometric tests. The earlier detection of changes in the small airways requires uncomfortable and complex procedures.

If, after a bolus of a foreign gas at the start of the previous inspiration, one breathes out slowly towards residual volume (RV), there is a point at which the alveolar concentration of the gas, as measured at the mouth, suddenly increases. This rise has been attributed to airway closure at low lung volume. In recent years an increase in the lung volume at which this occurs has been shown in adults in situations where minimal

pulmonary pathology is to be expected. It has been postulated that this test may provide a simple method of detecting small airways disease.

Closing volumes (CV) have been measured in 50 normal children from 7 to 16 years old using the nitrogen single breath technique. In contrast to adults there is a fall with age in CV as a fraction of vital capacity and in relation to functional residual capacity.

Studies in asthmatics with near normal spirometry show an increase in CV though the most discriminating measure of abnormality was closing capacity (CV+RV), which includes the rise in RV associated with airways obstruction. The changes in CV after salbutamol and exercise were described.

Effect of bronchodilators on respiratory resistance in infants and young children with bronchiolitis and wheezy bronchitis. N. Rutter, A. D. Milner, and E. J. Hillier. Children's and City Hospital, Nottingham. To be published in full in the *Archives*.

Diagnostic value of dynamic compliance in the immediate neonatal period. A. D. Milner, R. Saunders, and M. Purcell. City Hospital, Hucknall Road, Nottingham.

It is well established that the dynamic compliance is reduced in the idiopathic respiratory distress syndrome. This raises the possibility that measurement of dynamic compliance in the immediate neonatal period may have diagnostic and prognostic value. We have carried out serial measurements of dynamic compliance at 1-2 hours, 4-6 hours, 24 hours, and 48 hours in 41 neonates using oesophageal balloons and reverse plethysmograph system. These infants fell into a normal 'control' group of 22 infants who had no symptoms of respiratory distress, 9 infants who had transient respiratory distress (up to 12 hours), and 10 infants with symptoms persisting for more than 24 hours. The dynamic compliance values at 1-2 hours of age were higher in the control group (mean $1.14 \text{ ml/cmH}_2\text{O}$ per kg body weight, SD 0.41) than in those with transient symptoms (mean 0.47 , SD 0.16), or the infants with persisting respiratory distress (mean 0.70 , SD 0.79), but the range was wide. Infants had symptoms with compliance as high as $2.6 \text{ ml/cmH}_2\text{O}$ per kg, while others were free of grunting or tachypnoea at compliance levels of 0.57 .

The trend of the compliance over the first 6 hours of life appears to be of more value. 8 of the infants with persistent respiratory distress showed a fall over this period (from mean $0.82 \text{ ml/cmH}_2\text{O}$ per kg, SD 0.71 to mean 0.68 , SD 0.52), while only 2 of those with transient symptoms showed this fall (mean 0.47 , SD 0.16 to 0.57 , SD 0.25). 20 of the 22 control children showed a rise over this period. Our conclusions were that single compliance values are of little value in identifying those babies with signs of respiratory distress in the first few hours, who are liable to have persisting symptoms requiring treatment, but that serial measurements over the first few hours of life deserve further assessment.