born to diabetic mothers with vascular complications, but no diabetic mothers in this study had proliferative retinopathy or nephropathy.

DAVID BARR introduced by PROFESSOR J. O. FORFAR (Edinburgh). 'An Oral Calcium Test in Infancy.' An oral calcium test feed has been designed to investigate the handling of dietary calcium as reflected by short-term changes in the serum calcium level.

The response of a normal control group is defined and compared with results in infants suffering from a variety of calcium disorders.

In the acute phase of idiopathic hypercalcaemia, an extremely high and prolonged hypercalcaemia is found after the test feed. The effects of treatment and recovery are followed.

In further infants who were not strikingly hypercalcaemic, abnormal loading tests suggested that the test was a more sensitive diagnostic index than sporadic estimates of serum calcium. The test may be a guide to the need for continuing therapy, and a persistently abnormal loading test has been associated with a poor long-term prognosis.

In patients with nutritional rickets, vitamin D caused a 'shift to the left' in the shape of the loading curve. A similar effect was seen in a group with neonatal tetany when those undergoing spontaneous recovery were compared with those given vitamin D. The curves obtained in infants with idiopathic hypercalcaemia were compared with those in infants receiving vitamin D.

I. B. HOUSTON introduced by PROFESSOR J. A. DAVIS (Manchester). 'Renal Tubular Acidosis and Growth Retardation.' To be published in full elsewhere.

J. T. HARRIES introduced by DR. JUNE K. LLOYD (London). 'Studies of Vitamin E Function in Children with Malabsorption.' Though symptoms of Vitamin E deficiency are easily recognized in animals, the clinical importance of this vitamin in man is less well established. Vitamin E is a powerful antioxidant and probably plays a part in the functional integrity of cell membranes. This paper reported investigations on the vitamin E status of children with various types of malabsorption. The function of the red cell membrane has been studied by estimating autohaemolysis and peroxide haemolysis of the cells, and then correlating these effects with the serum levels of the vitamin. Many of the children with low serum levels of vitamin E (< 0.5 mg./100 ml.) had increased red cell haemolysis. Whereas autohaemolysis was increased from 6 to 62%, peroxide haemolysis was even more increased, varying between 20 and 90%. In most patients administration of the vitamin was followed by a prompt fall in haemolysis. The serum vitamin levels, however, took much longer to rise, and in some children low levels persisted for long periods after haemolysis had been restored to normal. Tests of red cell haemolysis appear to be much more sensitive indicators of vitamin E action at the cellular level than are estimations of the serum vitamin

concentration, and it is probable that peroxide haemolysis will prove to be even more sensitive than autohaemolysis.

N. R. C. ROBERTON introduced by PROFESSOR J. P. M. TIZARD (London). 'Relation between Arterial Oxygen Tension, Systemic Blood Pressure, and Electroencephalogram in the Respiratory Distress Syndrome.' To be published in full.

C. PICTON-WARLOW introduced by DR. J. W. SCOPES (London). 'Peripheral Circulatory Responses to Postural Change in Healthy and Sick Newborn Infants.' Venous occlusion plethysmography has been used to study forearm blood flow in healthy mature infants, healthy premature infants, and premature infants with respiratory distress syndrome.

In both mature and healthy premature infants, of birthweight varying upwards from 760 g., head-up tilting produces a rise in heart rate, a slight fall or no change in systolic blood pressure, and a reduction of forearm blood flow of 25-30% of the supine value.

Premature infants with severe respiratory distress syndrome have low forearm blood flow and low systolic blood pressure. Head-up tilting is followed by an increase in forearm blood flow. The physiological and clinical significance of this 'paradoxical' response to posture was discussed.

BERNARD KLIONSKY introduced by DR. W. W. PAYNE (London). 'Role of Hyperkalaemia in Experimental Fetal Asphyxia.' The levels of cardiac carbohydrate reserves are currently believed to be of prime importance in the ability of the fetus and newborn animal to resist anoxia. Histochemical observations on the hearts of anoxic stillbirths have shown persistence of considerable quantities of carbohydrate, indicating that death may occur before cardiac glycogen is depleted. This observation has prompted investigation of the possible role of hyperkalaemia as a cause of cardiac arrest in fetal anoxia. Changes in total cardiac carbohydrate and cardiac glycogen levels, pH, blood gases, and potassium levels have been studied in fetal rabbits after clamping the uterine vessels. Conspicuous increases of serum potassium are significantly higher than those reported in other experimental models.

The significance of the results was discussed in relation to the problem of human fetal anoxia.

NINA A. J. CARSON introduced by PROFESSOR I. J. CARRÉ (Belfast). 'Biochemical Response to Oral Pyridoxine in Homocystinuria.' Homocystinuria is an inherited disorder in the metabolism of the essential sulphur-containing amino acid methionine. In the normal individual, methionine is demethylated to form homocysteine which is then condensed with serine by the aid of the enzyme cystathionine synthetase to form cystathionine. This thioether is then cleaved by cystathionase to form cysteine. The presence of pyridoxine is required as a coenzyme in the latter two reactions.

In the homocystinuric patient, cystathionine synthetase is absent or abnormal, and this results in an increase in the concentration of the blood and urine homocystine and in an absence of cystine. As the reaction methionine $\rightleftharpoons$ homocysteine is reversible, methionine levels are also found to be raised in the serum. It is these findings that are used to establish a diagnosis.

Because pyridoxine is an essential co-factor in the enzymatic reaction of homocysteine to cystathionine, two groups of workers have given this vitamin in high dosage, and have reported biochemical success in some of their patients.

The response of 10 patients with homocystinuria, treated with oral pyridoxine and a normal mixed diet, is presented. In 5, the biochemical changes were normalized, i.e. homocystine concentrations in the serum have been much reduced, and cystine has appeared. In those cases in which the serum methionine concentration was raised, it has reverted to normal. The biochemical and therapeutic implications of these results were discussed.

M. M. SEGAL introduced by DR. JUNE K. LLOYD (London). 'Treatment of Familial Hypercholesterolaemia in Childhood.' Familial hypercholesterolaemia is associated with a high incidence of ischaemic heart disease in adult life. Treatment has therefore been instituted in affected children in an attempt to reduce this risk. Our experience with 12 heterozygous patients (aged from birth to 16 years) and one homozygous patient (aged 10 years) are presented. The homozygous patient developed tuberous and tendon xanthomata at the age of 18 months; her pretreatment serum cholesterol level was 1050 mg./100 ml. The heterozygous patients did not have xanthomata, but 2 had corneal arcus; their pretreatment serum cholesterol levels were 284-510 mg./100 ml. (mean 375).

Treatment reduced the serum cholesterol levels in all the patients. In the heterozygous children this was achieved by dietary means alone. The diet consisted of restriction of saturated fat and the addition of corn oil to provide polyunsaturated fat. A significant negative correlation was found between the percentage reduction in serum cholesterol and the amount of saturated fat allowed in the diet ($r = -0.80$; $p < 0.01$). In the homozygous child treatment had been previously unsuccessful, and cholestyramine and clofibrate were therefore used in addition to diet. A fall in serum cholesterol of about 400 mg./100 ml. was achieved, and this reduction has been maintained over a period of one year; though the levels remain high (589-675 mg./100 ml.), the xanthomata are regressing.

ALINA T. PIESOWICZ introduced by PROFESSOR O. H. WOLFF (London). 'Hyperprolinaemia.' A 6-month-old boy was found to have clinical and biochemical features of Type I hyperprolinaemia^{1,2}. Plasma proline was 25 mg./100 ml. There was high urinary excretion of proline, hydroxyproline, and glycine, with normal excretion of 4-pyrrolidine carboxylic acids. He had moderate mental retardation, EEG abnormalities, and dilated ureters on intravenous pyelography. In addition he had steatorrhoea, hypocalcaemic convulsions, generalized osteoporosis, and other skeletal changes, abnormalities which have not been previously described in hyperprolinaemia.

He was given a low proline diet (1.5 mg./kg./day). Plasma proline fell to 7 mg./100 ml. within 24 hours and remained around this level. After a month, proline intake was increased (63 mg./kg./day) without rise in plasma proline. Further studies including proline tolerance tests on parents, are proceeding in an attempt to find out whether this child has hyperprolinaemia or presents the heterozygous state, or has temporary immaturity of the enzyme system.

Proline is generally regarded as a non-essential amino acid, and it has been widely assumed that dietary treatment is unlikely to lead to a fall in plasma proline level. Low proline diet has been instituted in 2 other patients³, but results of treatment have not been previously described.

REFERENCES

- ¹ *New Engl. J. Med.* (1962). **267**, 51.
- ² *New Engl. J. Med.* (1965). **272**, 1243.
- ³ *Amer. J. Dis. Child.* (1967). **113**, 116.

A film on 'The PETO Experiment' was shown by Dr. G. G. Fagg.

THE WINDERMERE LECTURE. The Lecture was delivered by Professeur Maurice Lamy, Hôpital des Enfants Malades, Paris, on April 25; 'Immunologic Deficiency Disease in Childhood.'

Members and guests attended a Sherry Party at the Royal College of Physicians of Ireland on Wednesday evening, April 24, by invitation of the Irish Paediatric Association. The Association and its guests were entertained by the Minister for Health at a Reception on the evening of Thursday, April 25, at Iveagh House.

The Ulster Cup competition was held at Portmarnock Golf Club on Friday, April 26, and was won by Dr. K. R. Keay.

The Annual Dinner of the Association, attended by members, guests, and wives, was held on the evening of Friday, April 26, with Mr. Erskine Childers, Minister for Transport and Power and Posts and Telegraphs, as guest of honour.