Paediatric Research Society

Abstracts of Papers read at 16th Meeting, Welsh National School of Medicine, Cardiff, 3-4 October 1969.

Renal Function Studies in Girls with Asymptomatic Bacteriuria. D. C. L. Savage. The renal function in 5-year-old girls with asymptomatic bacteriuria was studied. No abnormality was found in creatinine clearance, and the results of urinary acidification were within normal limits.

The concentrating ability of these children after 19-20 hours of water deprivation was significantly different from that of controls ($p < 0.01$). In asymptomatic bacteriuria the urinary osmolality achieved by children with radiological evidence of urinary tract abnormality was significantly different from those with normal renal tracts ($p < 0.01$). This defect of concentrating ability was corrected by therapy.

Neonatal Polycythaemia. Peter M. Dunn. Neonatal polycythaemia may be arbitrarily defined as a venous packed cell volume (PCV) of 70% or more, or a capillary blood PCV of 75% or more, during the first month of life.

The known and suspected causes of neonatal polycythaemia were briefly reviewed. In particular, the ability of the placental transfusion and postnatal plasma shift to induce an intense transitory polycythaemia immediately after birth was discussed. In a study of 86 unselected normal term infants no cases of polycythaemia were detected at delivery, though the umbilical vein PCV was over 60% in 8% of cases (mean value 52%, range 37%-66%). Nor were polycythaemic values encountered during serial observations on 17 normally delivered term infants whose cords were clamped immediately (mean delay 1.1 sec.); for example, the mean PCV values and ranges for the cord blood and for the capillary blood at 5 and 24 hours were: 52% (45-62), 62% (56-68), and 55% (48-65). In contrast, half the infants in a matched group whose cords were left intact for at least 3 minutes after delivery (mean delay 4.7 minutes—infants lying on bed) became polycythaemic; the comparable mean values and ranges to those given above were 52% (43-64), 73% (63-86), and 65% (60-75) ($p < 0.001$). Further studies demonstrated a direct correlation between the PCV and the clinical estimation of blood viscosity ($p < 0.001$) and an indirect correlation between PCV and pH of capillary blood 4 to 12 hours after delivery ($p < 0.01$). The main clinical associations and complications of neonatal polycythaemia were briefly mentioned, as was the benefit to be obtained in selected cases from dilution

exchange transfusion with plasma or saline (20-30 ml./kg. body weight).

Neurological and EEG Findings in Infants with Disordered Calcium and Magnesium Metabolism. J. Keith Brown (*introduced by F. Cockburn*). Out of a group of 142 neonates with convulsions, 75 were due to abnormalities of calcium or magnesium metabolism—an incidence of 7 biochemical fits per 1000 deliveries. There was an increased incidence in the months of March to May, the commonest day of onset was the sixth, mean gestational age 39 weeks 6 days, mean weight 3345 g.

They were investigated neurologically, biochemically, and by EEG. The neurological examination consisted of the accepted three parts, assessment of gestational age, state of alertness, and examination proper. The jittery baby with exaggerated phasic reflexes was found in 39/75 cases and jitteriness was severe in 26. Carpopedal spasm was not an accompaniment and Chvostek's sign was not reliable. Varying degrees of extensor hypertonus were found in 27 cases and this was severe in 14, producing metabolic decerebration. In 14 cases there were splayed sutures and in 7 'sunsetting' of the eyes. There was no relation between decerebration and signs of raised intracranial pressure, the former appearing to be due to the metabolic lesion and not to pressure. No infant was hypotonic and none was apathetic.

The EEG was recorded using a temporal ring for 6 channels and the 7th and 8th as vertex electrodes over the motor area. The importance of this *montage* was stressed. 60% of the cases had an abnormal EEG, and in 40 it was frankly epileptic. Spike discharges were seen in all 53 ictal episodes which occurred during the EEG recording. No infant had a clinical fit with a normal EEG at that time, though an epileptic EEG could occur without a clinical fit. The site of the spike, configuration, amplitude, spread of discharge, and rate of discharge varied within the same fit. Two fits could occur at the same time clinically and electrically or a full blown hypsarrhythmic pattern develop. Focal myoclonic fits at a rate of one or three to four cycles per second were the commonest type seen; no infant had a classical *grand mal* fit.

Calcium and magnesium estimations were made by atomic absorption spectrophotometry. The lower normal for calcium was taken as 7.4 mg./100 ml. (mean—