baseline levels. Pressure studies were done under relatively isometric, not open manometric, conditions. Studies done with the ventricular fluid system open to flow at various levels of pressure show an early increase and a delayed decrease in cerebrospinal fluid formation with acetazolamide compared to a decrease in flow following isosorbide. (APS)

96 *Variation in Evoked Response Activity Among Negro, Caucasian and Oriental Neonates of Both Sexes.* RUDOLF ENGEL* and BRUCE V. BUTLER*, University of Oregon Medical School, Portland, Oregon, and DAVID CROWELL*, University of Hawaii, Honolulu, H.I. (introduced by Richard W. Olmsted).

442 Negro and 108 Oriental neonates were tested in their electroencephalographic response to light and compared with observations on 1507 Caucasian neonates. The latency measured from the stimulus to the onset of the evoked potential is inversely proportional to conceptional age ($r = 0.608$). This is evident in both sexes and the three races tested, in single as well as multiple births. The males, however, reacted significantly slower than females of comparable conceptional ages. Negroes tend to have shorter latency periods and Oriental longer latencies than Caucasians in both sex groups. Twins and many prematurely born single neonates may show a delay of response activity by the time they reach the estimated date of confinement, but body weight is not the determining factor. In a group of 126 paired twins the first born did not show a significant difference from the behavior of the second twin. The heavier neonate tended to remain the heavier twin, but the mean photic latency followed the slope of the regression line according to conceptional age for both twins. Male and female twins and triplets show a similar sexual difference in latency measurements as found in single births. (APS)

97 *Electroencephalographic Determination of Conceptional Age.* ARTHUR H. PARMELEE, YOSHIO AKIYAMA*, WALDEMAR H. WENNER* and MARVIN A. SCHULTZ*, Medical School, Univ. of Calif., Los Angeles, Calif., and FRANZ J. SCHULTE*, Universitats-Kinderklinik, Göttingen, West Germany.

Order could not be made of the constantly changing electroencephalogram (EEG) in infants until its relation to the shifting states of sleep was understood. Recording of heart rate, respirations, eye movements, and bodily movements with EEGs makes it possible to define specific levels of states of sleep and arousal. Recordings of 2½ to 3 hours between feedings insures sampling of several sleep states. We have defined the following states of sleep: 1. Quiet Sleep—regular respiration and no eye or body movements; 2. Active Sleep—irregular respirations, eye movements and intermittent small movements of the body. 14 fullterm infants, 17 premature infants and 5 small for dates infants have been studied. The EEG patterns characteristic for Quiet Sleep and Active Sleep have been identified at 32, 36 and 40 weeks conceptional age. The EEG maturation of the premature infants was followed by matching their EEGs taken at 2 to 4-week intervals with premature infants born at various gestational ages and fullterm infants. Similarly, the small for dates babies' EEGs were matched with the EEGs of prematures compatible with their birth weights and with their reported gestational age. In 4 babies with birth weights of 1840, 1850, 1860 and 2030 gm, and reported gestational ages of 39 or more weeks, the EEG patterns in Active and Quiet Sleep matched those of fullterm infants. One infant with a birth weight of 1275, and a reported gestational age of 36 weeks, had EEG patterns expected for this gestational or conceptional age. The EEG can be used to identify the gestational or conceptional age of infants if specific states of sleep are identified during the EEG recording. (APS)

98 *Neurological Maturation, Auditory Evoked Responses and Neonatal Course of Low Birth Weight Infants.* LEONARD GRAZIANI*, ELLIOT WEITZMAN*, MUTYA S.A. VELASCO* and ELAINE MORRIS*, Albert Einstein Coll. of Med., New York N.Y. (introduced by Harry H. Gordon).

An attempt has been made to correlate neurological maturation as estimated from standardized neurological examination with that estimated from latency measurement and wave form of the EEG response evoked by auditory stimuli. 31 infants whose birth weights were between 1110 and 2060 g were studied. All examinations of neurophysiologic reflexes and muscle tone were made by one observer within two weeks after birth and maturation estimated according to the criteria of SAINT-ANNE DARGASSIES and THOMAS. Algebraically summed evoked responses to auditory stimuli were recorded simultaneously from 10 scalp electrodes, using a standard EEG, tape recorder and computer of average transients. Details of the clinical course were observed and recorded in a systematic fashion by special observers. Gestational (post-conceptional) age was estimated from the mother's menstrual history. Group A consists of 15 infants whose birth weights were below the 10th percentile for gestational age (35–40 weeks) according to the Colorado standards. Group B consists of 16 infants whose birth weights were between the 25th and 75 th percentile for gestational age (31–35 weeks). Within this range of birth weights (1110–2060 g), neurological maturation estimated from either neurologic examination or evoked responses was better correlated with gestational age than with birth weight. The infants who were small for age (old for weight) had more mature evoked responses and more mature neurological examinations than those in the same low birth weight group who were not small for age. There were less apneic episodes, less cyanosis and more rapid gain during the neonatal course of small for age infants than of normal weight for age infants. (SPR)

99 *Photic Evoked Responses During Sleep in the Premature Infant.* HIROTOSHI UMEZAKI* and FRANK MORRELL*, Stanford Univ. Sch. of Med., Palo Alto, Cal. (introduced by Marshall Klaus).

Photic evoked responses were measured during rapid eye movement (REM) and non-rapid eye movement (NREM) sleep in 13 premature infants (30–38 weeks gestation) using a LINC computer and correlated with gestational age. Twenty responses were averaged and displayed with an analysis time of 1024 msec. Clinical status, electroencephalogram, respiratory pattern, eye movement and electrocardiogram were utilized to evaluate sleep status. Photic evoked responses were detected in all cases and the most marked responses were localized in the occipital leads.

Typical responses in parieto-occipital lead were composed of an initial, vertex positive, peak (P_1) and an after discharge with 4–5 peaks. Phase reversal of P_1