In the forebrain the concentration of total gangliosides expressed as *N*-acetylneuraminic acid rose sharply during the latter part of gestation to a peak value at birth. A subsequent fall to 9 weeks of age was followed by a rise to an almost mature value at 20 weeks. In the cerebellum the highest concentration was at 7 weeks of age, with a subsequent fall from 9 weeks to a near mature value at 20 weeks. In the brain stem a slight rise in concentration during the latter part of gestation was followed by a fall to, again, a near mature value at 20 weeks.

When expressed as amounts per brain part, the amount of *N*-acetylneuraminic acid in the forebrain rose during the foetal stages, remained almost constant during the first 9 weeks of postnatal life and subsequently rose to a near adult value by 20 weeks. The amount of *N*-acetylneuraminic acid per cerebellum rose rapidly to reach an almost adult value at 9 weeks after birth. In the brain stem the greatest rise was before birth and the adult amount was present by 7 weeks.

In each part of the brain the percentage distribution of the four major gangliosides had the mature pattern at birth.

The developmental pattern of the gangliosides in the brain of the pig will be compared with that in the rat (Dickerson & Merat, 1971) and with that of other constituents in the pig (Dickerson & Dobbing, 1966). The relationship of the developmental changes to the effects of malnutrition will be discussed.

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Compartmental Analysis of the Distribution of Cholesterol in the Isolated Perfused Rat Liver

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The rate of cholesterol turnover has been described as conforming to a two-compartmental system consisting of one pool that turns over rapidly and a second pool with a low turnover rate (Goodman & Noble, 1968). The pool with the higher turnover rate is associated with the blood, liver and intestine. We have performed experiments with the isolated perfused rat liver preparation to examine transfer rates of cholesterol between whole blood, liver and bile.

Livers from rats of the Wistar strain were perfused by a method essentially as described by

Percy-Robb & Boyd (1970). The liver cholesterol was labelled by adding a single pulse of DL-[¹⁴C₂]-mevalonate to the perfusate and the time-course of the rates of appearance of radioactive cholesterol in erythrocytes, plasma, liver and bile were determined. Model simulation was performed on an EAL PACE TR48 analogue computer and estimates of the transfer rates were determined by 'eye-fit' of the experimental results to the simulated curves displayed on a trace oscilloscope.

On a theoretical basis there are at least six compartments in this system, namely plasma esterified and unesterified cholesterol, liver esterified and unesterified cholesterol, and cholesterol in erythrocytes and bile. The system is, however, probably more complex, since individual pools of cholesterol may exist in different lipoprotein classes (Roheim, Haft, Gidez, White & Eder, 1963). We have fragmented the model to determine transfer rates in a closed plasma and erythrocyte system and applied these rates to the larger model. The larger transfer rates (min⁻¹) were associated with the exchange between plasma unesterified and plasma esterified cholesterol, and between plasma unesterified and erythrocyte cholesterol, these being an order of magnitude greater than the lowest rates of exchange between liver unesterified and plasma unesterified cholesterol and between liver unesterified and liver ester cholesterol. The unidirectional flow of cholesterol into the bile has a very low transfer rate when cholesterol is considered alone, but is much larger if one considers the transfer in the form of bile acids (Kay & Entenman, 1961; Percy-Robb & Boyd, 1970).

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Optical-Rotatory-Dispersion Studies of Steroid Molecules in Liposomes and Erythrocyte Membranes

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The natural cholesterol of animal cellular membranes can be replaced to a considerable extent with other steroids by allowing an exchange to occur between the membrane and liposomes containing