Support for our observations is to be found in the report by Fuhrman[8] that quinone, hydroquinone and *p*-benzoquinone inhibit active Na^+ ion transport in the short-circuited frog skin. Thus, it is not surprising that the anthroquinone cathartics inhibit Na^+ ion transport. While the anthroquinone effect is reversible, the action of quinone was found to be irreversible by Fuhrman. Dr. A. B. Hastings[9] has directed our attention to the fact that the choline acetylase inhibitor 2-methyl-1,4-naphthoquinone enhances the rate at which K^+ ions leave human erythrocytes which is generally considered to be concomitant with decrease of sodium transport.

In view of the results presented here the classical concept of cathartic action by simple irritation with enhanced peristalsis must be re-evaluated and the probability of very specific mechanisms must be entertained. These investigations are continuing in an attempt to assess the role of these and other cathartics on active Na^+ ion transport in man and other species.

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Sudden Increase of Fat in the Liver of Mice at Birth

During late foetal development, the mammalian liver accumulates fat. After birth, changes in fat content seem to differ according to species, and different accounts do not agree. In the guinea-pig, Imrie and Graham[1] demonstrated peak amounts of liver fat at the end of prenatal life and gradual decrease of fat after birth. In the rabbit, Stieve and Kaps[2] confirmed this by histological methods. In contrast, Malet *et al.*[3] stated, on histochemical grounds, that there was little lipid in the newborn mouse, and an increase around the 18th hour of life.

In the present investigation, we have demonstrated the sudden increase of liver fat at birth in mice by extracting fat by chloroform–methanol. We also attempted to determine whether the increase occurred when the foetuses stayed in the uterus beyond the normal duration of pregnancy.

The liver of each foetus or newborn animal was ground in 10 ml. of a 2 : 1 chloroform-methanol mixture. The mixture was kept frozen overnight and 7 ml. was taken and added to 2 ml. water. One day later, 4 ml. of the chloroform-layer was taken and finally evaporated overnight in an oven at 60° C. The weight of the crude fat extracted in such a way was obtained by subtracting the weight of the container using a Sartorius balance with a sensitivity of 0·01 mg. The fat content was expressed as mg/100 mg of fresh weight of liver.

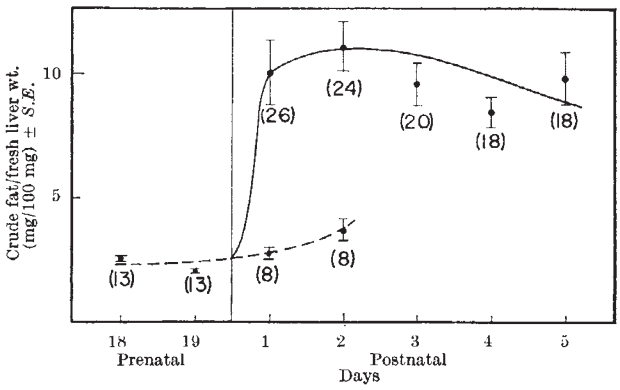

Fig. 1. Liver fat content before and after birth. - - - -, Foetuses; the numbers in parentheses indicate the number of animals observed

The results are shown in Fig. 1 which clearly shows the remarkable increase of the liver fat at birth; the change from day 19 of prenatal life to day 1 of postnatal life is statistically significant ($P<0{\cdot}001$). In contrast, in foetuses retained beyond the normal gestation, the liver fat showed only a slight increase, far lower than the increase on day 1 ($P<0{\cdot}001$).

The observations suggest that the sudden increase of the liver fat at birth does not occur spontaneously but follows the separation from the maternal environment.

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IMMUNOLOGY

Sensitivity of Passive Haemagglutination for Assay of 7S and 19S Antibodies in Primary Rabbit Anti-bovine Serum Albumin Sera

The formation of macroglobulin (19*S*) antibodies, in the primary response of various animal species to a variety of antigens, is often followed by an increased synthesis of 7*S* γ-globulin antibodies. This sequence of antibody synthesis was reported to occur in rabbits following immunization with bovine serum albumin (BSA)[1,2]. A similar replacement of 19*S* with 7*S* anti-BSA antibody was described in chickens[3]. As a consequence, the anti-protein response in these animals has been interpreted in recent reviews as being similar to the sequential synthesis of antibodies to certain particulate antigens, in which early primary antisera consist predominantly of 19*S* antibodies[4–6].

To some extent, this laboratory has been responsible for this notion. In those investigations dealing with the immune response to BSA[1,2], among other soluble proteins, and to haptens[7], evidence for the difference in molecular species of antibody as related to the stage of immunization was based, in part, on assay of antibody by the passive haemagglutination technique[8]. However, the use of this technique is misleading for this purpose. We reported[2] that rabbit anti-BSA precipitins migrated electrophoretically mainly as γ-2 globulin and that the haemagglutinins (HA) migrated with the γ- and β-globulins, and we suggested that haemagglutination might measure antibody not measured by the quantitative precipitin method. In addition, early primary chicken anti-BSA antisera contain 7*S* precipitating antibody; whereas most of the HA are heavy[9].