our rats receiving the "winter" milk were suffering from rickets, and the irradiated milk brought about increased calcium and phosphorus balances. Macroscopic examination of the animals which died gave none of the characteristic symptoms of rickets, but since histologic examinations were not made, exact evidence is lacking. It would seem, however, that the very rapid growth of the animals on the irradiated milk, was more deep seated than just an increase in the anti-rachitic potency of the milk.

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Vitamin A content of fecal excretion of a breast fed and artificially fed infant. Preliminary report.

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Rats fed on diets adequate in all other respects but low in the Vitamin A factor, develop, in the course of time, infection of the upper respiratory tract. The first symptoms of the dietary deficiency are snuffles, loss of appetite, and failure to gain. These animals invariably die unless appropriate dietary treatment is introduced fairly early in the course of the infection. Macroscopic examination of the various organs of these animals, with the exception of the aural and nasal passages, which have been found filled with pus, shows nothing consistently abnormal. Occasionally the lungs are infected, often the intestines are filled with gas and greatly distended. Death in these animals seems to be the result of an infection superimposed on tissues which have been altered by the dietary deficiency.

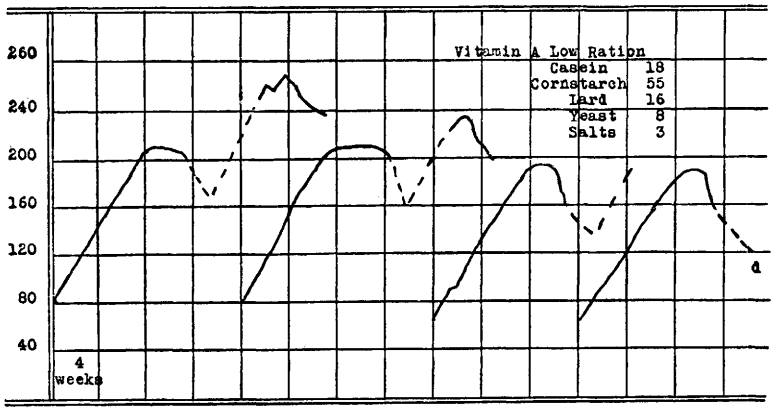
The excessive reaction to infection of the upper respiratory tract (nasal and aural passages) of the artificially fed baby and the low incidents of such infection amongst breast fed babies, suggests that in the former case as in the rats, we are dealing with an infection superimposed on tissues which have been altered by a dietary deficiency.

The possibility of the occlusion of Vitamin A in the calcium soap excreted by the artificially fed baby, and the consequent failure to absorb enough to meet the physiological needs, was

suggested by Daniels and Armstrong in 1923.[1] Acting upon this suggestion a comparative study of the Vitamin A excretion by way of the gut, in an artificially fed and in a breast fed infant, has been made.

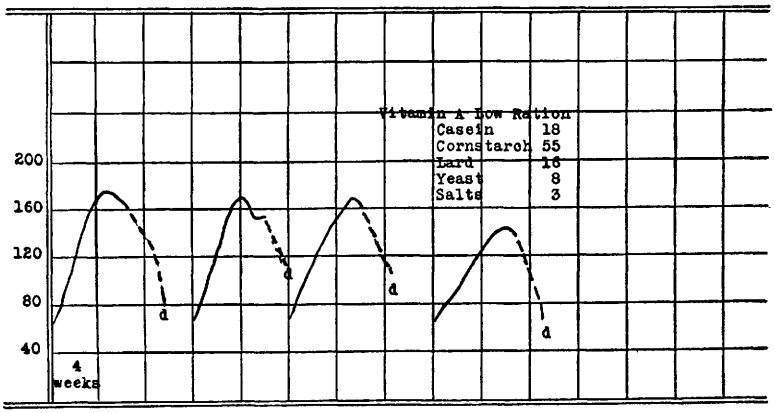
In the investigation, rats, at the weaning period were placed on purified diets, low but not wholly lacking in Vitamin A. When the weights of these animals became stationary and they had developed the characteristic symptoms of the infection of the

CHART I.



Growth curves of animals on Vitamin A low diets. The broken line indicates period of addition of ether extract, of artificially fed infant's stool.

CHART II.



Growth curves of animals on Vitamin A low diets. The broken line indicates period of addition of ether extract of breast fed infant's stool.

[1] Daniels, A. L., Armstrong, M. E., and Hutton, M. K., *J. Am. Med. Assn.*, 1923, lxxxi, 828.

upper respiratory tract, the ether extract of a three weeks fecal excretion of a seven months old baby, who was receiving a milk, dextri-maltose feeding mixture, was incorporated in the "A" low ration and was fed to a group of four animals over a corresponding period of time. To the Vitamin A low diet of another group of rats was added the ether extract of the three weeks fecal excretion of a six months old baby, who was at the same time receiving, in addition to the breast milk, one teaspoonful of cod liver oil and one ounce of orange juice daily.

With one exception, the animals receiving the ether extract of the artificially fed baby's stool gained in weight and apparently recovered from the infection; whereas, those receiving the extract of the breast fed baby's stool all died. From these results it would seem that the Vitamin A in the food of the breast fed baby is more completely absorbed than is the Vitamin A content of the food of the artificially fed baby.

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The colorimetric estimation of the hydrogen ion concentration of urine.

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A year ago a simple technique of estimating the pH of urine was suggested,[1] in which application was made of the bicolorimeter and the phthalein dyes, phenol red, brom cresol purple and brom cresol green. At that time we concluded that as far as the matching of colors went, the method had a probable error of pH $\pm$ 0.02 to 0.04, but we realized that the factors of temperature and dilution must exert some influence on the true pH. Obviously one desires to know the pH of the undiluted urine at body temperature. During the past year we have been trying to ascertain how far colorimetric determinations on diluted urine at room temperature differ from electrometric determinations on

[1] Myers, V. C., and Booher, L. E., PROC. SOC. EXP. BIOL. AND MED., 1925, xxii, 511.