# SCIENTIFIC PROCEEDINGS.

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### 37 (2560)

### Relation of vitamin A to growth, reproduction and longevity.

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Experiments are described in which parallel groups of rats of identical previous history were fed upon two types of diet, one rather low and the other fairly high in vitamin A, from soon after weaning-time until natural death.

The smaller amount of vitamin A proved sufficient for normal growth up to nearly normal adult size, but not for successful reproduction, and rarely did it support satisfactory longevity. The parallel animals receiving the more liberal allowance of vitamin A grew to fully average adult size, were successful in reproduction and the rearing of young, and lived on the average a little over twice as long as those on the diet equally good in all other respects but lower in vitamin A.

These experiments show strikingly that a proportion of vitamin A in the food sufficient to support normal growth and maintain every appearance of good health, for a long time at least, may still be insufficient to meet the added nutritive demands of successful reproduction and lactation.

Along with the failure to reproduce successfully there usually also appeared in early adult life an increased susceptibility to infection and particularly a tendency to break down with lung disease at an age corresponding to that at which pulmonary tuberculosis so often develops in young men and women. The bacillus involved is different; but the close parallelism of increased sus-

ceptibility of the lung to infection at this stage of the life history appears very significant, especially in view of the fact recorded in another paper from this laboratory that the vitamin-A-content of lung tissue varies with that of the food.

Especially noteworthy was the repeated observation of young females growing normally and presenting every appearance of good health throughout youth on a diet low in vitamin A, but failing utterly to succeed in the rearing of a second generation, and showing a strong tendency to break down in health at an age at which they should have been in the prime of life.

Thus it is clearly shown that vitamin A is an even more important factor in the chemistry of food and nutrition than has previously been appreciated, for it must be supplied in liberal proportion not only during growth but in the food of the adult as well, if a good condition of nutrition and a high degree of health and vigor are to be maintained.

## 38 (2561)

## Oil activated by irradiation. II. Separation into an antirachitic and an inactive fraction.

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In previous communications[1, 2] it has been reported by us that inert vegetable oils, such as linseed or cotton seed oil, can be endowed with antirachitic properties by means of irradiation with ultraviolet rays, and furthermore that the same property can be communicated to lettuce or to growing wheat by this form of radiation.

It is well-known that the antirachitic principle of cod liver oil is contained in its unsaponifiable fraction and that the saponifiable fraction is inert (Zucker). It seemed therefore of interest to

[1, 2] Hess, A. F., and Weinstock, M., PROC. SOC. EXP. BIOL. AND MED., 1924, xxii, 6, 5.