

## PRECIPITATION TESTS IN MICE

### III. A DISTURBANCE BETWEEN TWO HUNDRED AND THREE HUNDRED DAYS OF LIFE <sup>1</sup>

LEONELL C. STRONG

*(From the Department of Anatomy, Yale School of Medicine)*

In the first and second papers of this series <sup>2</sup> data were presented which indicated that there was, with advancing age, a gradually decreasing amount of a trichloroacetic acid-total blood precipitate in individuals of the inbred A strain of mice. These data are further analyzed here.

Chart 1 presents the data obtained on normal females of the A strain, classified (1) according to age and (2) according to hours of deprivation of food. The latter classification is given along the base line, the reading of the precipitate along the ordinate. The data for the mice between 101 and 200 days of life are represented by the solid line; for mice between 201 and 300 days by the short dash line; for mice between 301 and 400 days by the dotted line; for mice between 401 and 500 days by the long dash line; and finally for mice between 501 and 600 days of life by the dot and dash line. Each point on the chart was determined by the average of several independent observations; the individual determinations in each point are given in the small numeral adjacent to that point.

It will be noted that three of the curves are very close together, namely those for the mice from 101 to 200 days old, from 301 to 400 days old, and from 401 to 500 days old. Because of the proximity of these three curves, they were combined and appear as a single curve in Chart 2.

For the sake of discussion, it may be assumed that there are two fundamental types of curve. The first type (*a*) was obtained in young animals between 101 and 200 days of life. This type of curve was found, also, in mice between 301 and 600 days of life. Since the curve encountered in mice of 101 to 200, and 301 to 500 days of life and that for mice of 501 to 600 days are practically parallel, one may conclude that the only difference here is due to the absolute reading. The second type of curve (*b*) is that for mice between 201 and 300 days of life.

There is thus indicated a disturbance in mice in the mechanism or mechanisms that control the final precipitate reading between the ages of 201 and 300 days of life. It is of interest to bring this finding into relation with the mortality curve for individuals of the same strain.

Chart 3 presents two sets of data: (1) the age distribution of spontaneous carcinoma of the breast represented by the solid line, and (2) the mortality

<sup>1</sup> These experiments have been partially supported by a grant from the Josiah Macy, Jr. Foundation.

<sup>2</sup> STRONG, L. C., AND WERNER, T. H.: *Am. J. Cancer* 26: 767, 1936.

curve for all other causes of death than cancer. From these data it is possible to conclude that mice go through a period of depression at six months, as measured by the peak of the mortality curve. If they recover from this period, they develop carcinoma of the breast in ever increasing frequency. The disturbance in the mechanism, or mechanisms, which controls the pre-

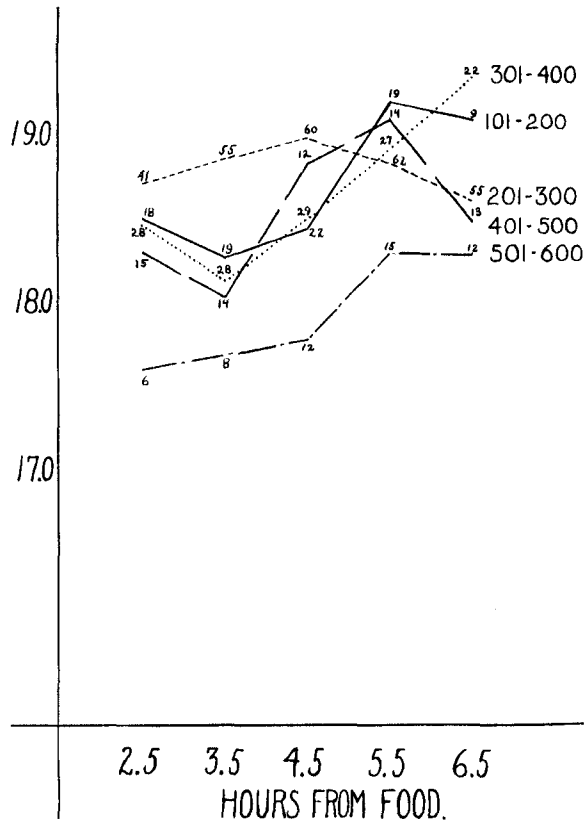


CHART I. DATA FOR FEMALE MICE OF THE A STRAIN CLASSIFIED BY AGE AND PERIODS OF FOOD DEPRIVATION

Hours of deprivation of food are plotted on the base line; reading of precipitate along the vertical line. Data for mice between 101 and 200 days of life are represented by the solid line; for mice between 201 and 300 days by the dash line; for mice between 301 and 400 days by the dotted line; for mice between 401 and 500 days by the long dash line; and for mice between 501 and 600 days by the long dash and dot line. The number of determinations at each point is given by a small numeral opposite the point in question.

precipitate reading coincides very closely with this "period of depression." Is the disturbance at this age correlated with the eventual onset of cancer?

This investigation has opened up the opportunity of investigating further dynamic changes within the physiology of the "control" animal that may throw some light on the liability or susceptibility to the neoplastic condition.

The immediate development of the work calls for the further improvement of technic. This demands not only the utilization of the more reliable tests for hemoglobin determinations, but also the careful control of factors that are known to influence the hemoglobin level.

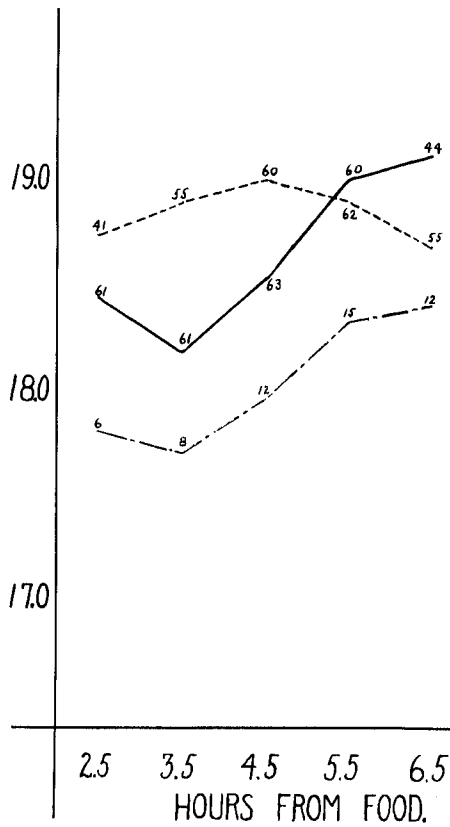


CHART 2. DATA SIMILAR TO THAT IN CHART 1 IN SIMPLER FORM

Due to the proximity of three of the preceding curves, the data for these classes are combined in a single curve (solid line) (see text). The number of determinations in each point is given by small numerals.

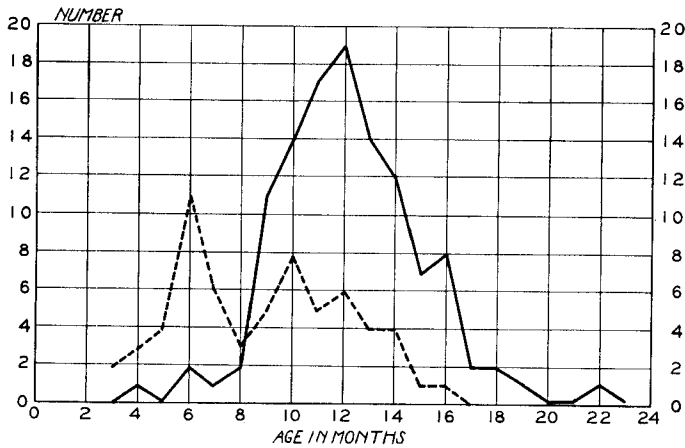


CHART 3. AGE DISTRIBUTION OF SPONTANEOUS CARCINOMA OF THE MAMMARY GLAND IN FEMALE MICE OF THE A STRAIN (SOLID LINE) AND THE MORTALITY CURVE FOR MICE OF THE SAME STRAIN THAT DIE OF ALL OTHER CAUSES THAN CANCER  
Age in months is plotted along the base line; number of individuals along the vertical line.