to taste both the salt and the saccharin using wet tongues, but 16 failed to detect the saccharin and nine failed to detect the salt with a dry tongue. Apparently, therefore, saliva aids in many taste sensations, but its effect is most pronounced with P. T. C.

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Sex Influence on Embryonic Death Rate in Chicks

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Thornton (*7*) reported evidence from this laboratory that the death rate in chick embryos up to 5 days of age was greater in females than in males. Landauer and Landauer (*5*) in summary data showed that the sex ratio of chicks at hatching was 48.77. Byerly and Jull (*1*) reported the sex of embryos that died after 9 days of incubation to be 48.59% males. These data would suggest that the mortality rate during this period was higher in females. Hays (*2*) gave the sex ratio in chicks at 8 weeks of age as 50.85% males. Hays (*3*) showed that the primary sex ratio in chickens is about 50–50, with considerable variation between families. In general, observations of different workers suggest that there may be considerable variation between breeds and strains with respect to sex ratio (*6*).

Data collected in the spring of 1949 on the Massachusetts Experiment Station flock of Rhode Island Reds strongly indicate that among embryonic deaths up to 5 days of incubation there is a higher incidence in females than in males. In the fowl the female is the heterogametic sex, and the reduced ratio in females corresponds to the reduced ratio of males reported for most animals where the male is the heterogametic sex.

The data presented in the table include 5450 eggs set in six weekly hatches, including eggs laid from February 5 to March 25, there being a 1-week interval in which eggs were not saved between the third and fourth hatches.

TABLE 1

Hatch	Egg production	Total embryonic mortality %*	Early embryonic mortality %†	Sex ratio at 8 weeks
1	1337 (F5–11)	20.5	19.8	50.0
2	1238 (F12–18)	27.5	28.7	50.0
3	1097 (F19–25)	32.4	55.0	56.6
4	991 (M5–11)	20.8	32.5	52.8
5	948 (M12–18)	24.1	31.1	53.4
6	921 (M19–25)	27.6	38.4	56.5

* Based on fertile eggs.
† Percentage of embryos that died early.

A very mild epidemic of bronchitis appeared in the breeding pens soon after the collection of hatching eggs began. This disease outbreak caused a linear decline in production during the period, in contrast to the normal rapid increase expected at this season (*4*). Effects of the disease were observed both on fertility and embryonic death rate. Sex of the chicks was not determined until they were 8 weeks of age, but the postincubation death rate was low in the 3200 chicks retained.

The table shows that total embryonic mortality did not increase greatly through the hatching season, but the early embryonic death rate almost doubled as the season progressed. This observation suggests that the disease virus had a lethal effect which operated early in the development of the chicks. The last column gives the percentage of survivors at 8 weeks of age that were of the male sex. The abnormally high percentage of males from the last four hatches strongly indicates that the majority of embryos that died early must have been females. These data, together with those of Byerly and Jull (*1*), show that the embryonic death rate in females is higher than in males, at all stages of embryonic development.

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