

SUMMARY OF THE PAPER ENTITLED

"A METRICAL STUDY OF A THOUSAND MOTH
COCOONS."

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In the autumn of 1916, the cocoons of the *Cecropia* and *Polyphemus* moths were very numerous in the southwestern portion of Chicago. Two hundred forty-eight *Cecropia* cocoons were counted on one small catalpa tree on a lawn in Roseland. A small hickory about two feet high, found growing on the open prairie near the city limits, was so plastered with cocoons that no stem or branch was visible.

There were two centers of abundance; one in Roseland; the other in the neighborhood of the B. & O. railroad crossing at 91st street. These centers had apparently been populated by the moths from a common point in the neighborhood of Chicago Heights where the moths had been especially abundant the preceding year. The direction of migration from this original center had been determined apparently by the prevailing winds.

In the fall of 1916, some eighteen hundred *Polyphemus* cocoons and forty-two hundred *Cecropia* cocoons were collected in the two regions mentioned. Since then, collections have been made annually for the purpose of comparison with the first lot. In 1916, five hundred cocoons each of the *Cecropia* and *Polyphemus* were taken at random from the thousands collected to make a careful study of the cocoons and moths that were hatched from them. Similar samplings have been made each succeeding year, though in decreasing numbers since the cocoons are becoming scarce. The results of the study may be briefly stated as follows:

1st—The percentage of parasitized and diseased pupae has increased steadily during this period of five years, until now, the season of 1920-21, it is next to impossible to find a viable cocoon. In 1916, about one per cent of the

cocoons were parasitized, and thirty per cent dead through fungus disease.

2nd—In both moths, the lightweight cocoons produce males; the heavy cocoons, females. Thus, out of the thirty heaviest *Cecropia* cocoons, no males were produced; and out of the heaviest fifty, only five males. Out of the lightest thirty, nine females came; out of the lightest fifty, seventeen. The proportion of males to females in the whole lot was fifteen males to thirteen females.

3rd—Males were much more subject to death through fungus disease than females.

4th—The cocoons were kept indoors in a warm basement from the time of collection in November until they hatched in the following spring. The time of the appearance of the moth from the cocoon was about a month earlier than control cocoons left outdoors during the winter.

5th—The correlation between the weight of the pupa and the weight of the silk in both *Cecropia* and *Polyphemus* cocoons is low, and that between the weight of the pupa and the weight of the moth is still lower.

6th—There is a fairly close correlation between the weight of the pupa and its loss of weight in emerging from the cocoon.

7th—Males lose a much larger proportion of their pupa weight in transforming into moths than do females.

8th—*Cecropia* is much more variable in the weight of both pupa and silk than is *Polyphemus*.

9th—*Cecropia* is much more subject to parasitization than is *polyphemus*, at least in those stages examined. It may be that the *Polyphemus* larvae are killed by parasites before the cocoon is made.