

**Hancock's Studies of Inheritance in Green and Pink
Katy-Dids, *Amblycorypha oblongifolia* DeGeer
(Orthop.: Tettigoniidae).**

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In the ENTOMOLOGICAL NEWS, Vol. xxvii, pp. 70-82, the late Dr. Joseph Lane Hancock, of Chicago, gave a preliminary account of his extraordinary experiment in crossing a male green Katy-did with a pink female of the species *Amblycorypha oblongifolia*. There is an historical sketch, an account of the finding of the pink female and a description, in considerable detail, of the methods of breeding and the general biology of these Katy-dids. Then there is a summary, in part as follows:

1. A green male was mated to the pink Katy-did, and the eggs were oviposited in the summer of 1912. Hancock was the first to observe that the females of this species oviposited in the ground. He was also first to discover that some of the eggs required two, and others three years before hatching.

2. There were thirteen F_1 progeny, eight pink and two green hatched two years (1914), and one pink and two green hatched three years (1915) after the eggs had been oviposited, a ratio of 9 pink: 4 green. There were approximately as many males as females.

3. In June, 1914, four pairs of the F_1 pink, and one pair of the green Katy-dids were mated. Three of the pink and the one green female oviposited in the ground of their respective cages late in the summer and early autumn.

4. In the summer of 1915, a green female, of the one pink and two green individuals which hatched that year from the 1912 mating, was mated to a green male from the field. Later in the summer she oviposited.

5. Hancock concluded that the pink color, as well as the green, was hereditary, and that the idea of these colors in Katy-dids being dependent on the absorption of the coloring matter taken in with the food was erroneous.

At the time of the publication of this paper, February, 1916, Hancock was looking forward to the hatching of the F_2 progeny in the summers of 1916, 1917 and 1918.

THE F_2 AND F_3 PROGENY FROM THE FURTHER BREEDING OF
THE OFFSPRING OF THE GREEN X PINK MATING OF 1912.

Circumstances prevented Dr. Hancock from publishing his further observations and records. On January 5, 1919, the main results were written down as Dr. Hancock verbally related them to me. Since his death Mrs. Hancock has generously furnished his complete notes, composing more than forty type-written pages of the unpublished part of the observations and experimental results.

Most of the notes refer to observations of the habits of the Katy-dids such as feeding (they were cannibalistic to some extent), mating, ovipositing, hatching of the offspring, growth, molting, effects of temperature and moisture, and enemies (mostly spiders). The males were much less viable than the females. They ate best a mint common in the region of Lakeside, Michigan, where the experiment was carried on. Among the green ones, the males were yellowish green while the females were bluish green. Among the pink individuals the males had a touch of yellow while the females were bluish red. There were some variations in patterns. One male had strikingly blacker hind tibia than the others. Some had the thorax marked with a black line on each side which was in contrast with others.

Beginning where Dr. Hancock left off (*loc. cit.*), the one pair of F_1 green individuals gave 21 all green offspring in 1916, and two green ones in 1917 (see diagram p. 16). The one surviving F_1 green female which hatched in 1915, mated to a male from the fields, gave 58 all green ones in 1917, and "A number of green young with no pink", in 1918. From the three F_1 pink females, mated to pink brothers, in 1914, 32 green and 75 pink individuals were hatched in 1916; six green and fifteen pink were hatched and recorded in 1917, making a total F_2 progeny of 38 green: 90 pink. Several of the F_2 pink males and females of the 1916 hatching were inbred, and they gave 35 green and 209 pink in 1918, and 1 green and 1 pink in 1919 (see diagram p. 5). Obviously, among the parents of the F_3 progeny there were some which were homozygous for pink.

Hancock states that he bred green males and females, from the field, aside from the green x pink stock, as controls, and

that they were parallel in respect to the two-and three-year periods required for the eggs to hatch, and all the progenies were green.

Miss Isabel Potter has aided in checking the figures used with Dr. Hancock's notes.

CONCLUSIONS.

1. The eggs of the Katy-did, *A. oblongifolia*, oviposited in the ground in the late summer and early autumn, hatch in the early summer, some of them two, and others three years afterwards.

2. Since the green individuals bred true consistently, and the F_1 pink males and females gave green and pinks in F_2 in a ratio of 38:90, it appears that the green and pink of *A. oblongifolia* compose a pair of Mendelian characters, with the pink color dominant. The original pink female parent was heterozygous for pink and green, respectively.

3. The assiduousness of Dr. Hancock in carrying out this most arduous experiment, over a period of seven years, will be appreciated and admired by all.

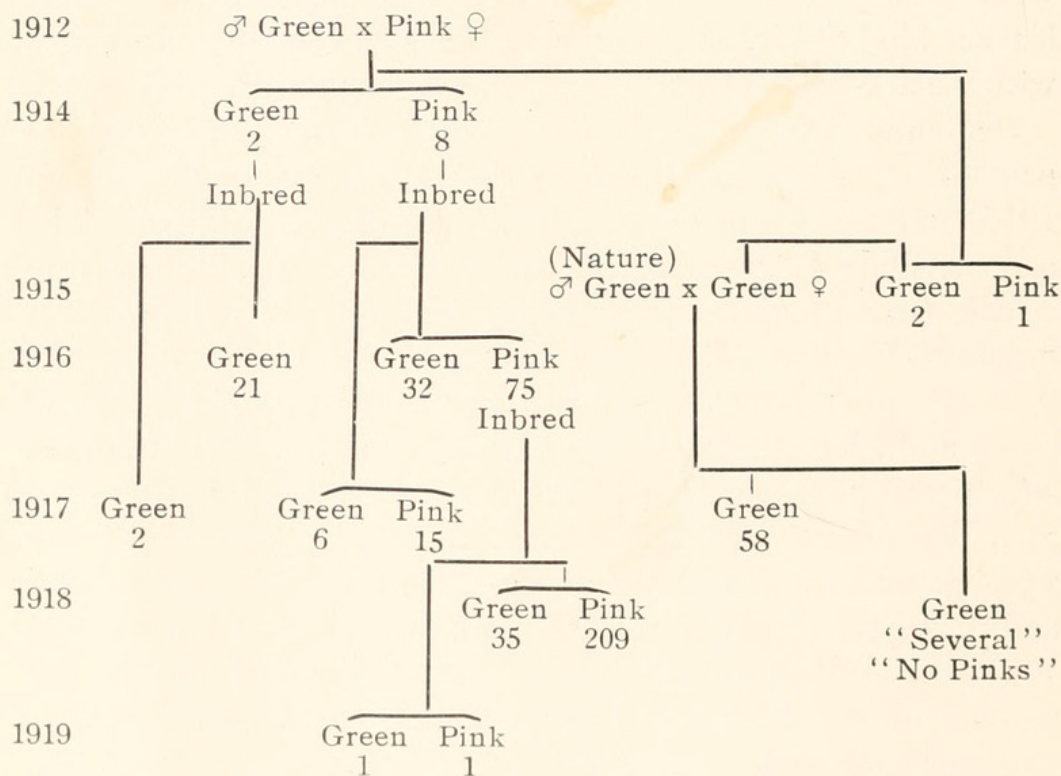


Diagram Showing the Inheritance Results from the Crossing of a Green Male Katy-did with a Pink Female Katy-did (*Amblycorypha oblongifolia*). From the notes of Dr. Joseph Lane Hancock. (There were approximately equal numbers of males and females.)



Nabours, Robert Kirkland. 1929. "Hancock's Studies of Inheritance in Green and Pink Katydid, *Amblycorypha oblongifolia* DeGeer (Orthoptera: Tettigoniidae)." *Entomological news* 40, 14–16.

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