

uniformly colored red females were produced. From 1909 to 1918 no evident improvement in the uniformity of the red coloring has appeared. The reason for the marked improvement in 1909 was due to the fact that, unintentionally, blood from the Dark Brahma (also an Asiatic breed) was introduced. This race has no Buff Cochin blood but a type of pattern which is more diffuse than that of the Jungle Fowl and hence permitted the buff pattern to break the limited bounds proscribed by its position on the Jungle Fowl.

Owing to the great amount of inbreeding which the experiment has necessitated and the increasing sterility and weakness of the offspring it will be necessary soon to bring the experiment to a close. The results obtained, however, speak strongly for the impotence of selection in an inbred line, with few genetical factors, unless new mutations afford new foundations upon which to advance. It is quite clear that the original Buff Cochin was not made by slow selection from a bird with the Jungle-fowl type of coloration. The Buff Cochin probably originated as a xanthic sport.

71 (1446)

The influence of parental alcoholism upon habit formation in albino rats.

By **E. C. MACDOWELL** (by invitation).

[*From the Station for Experimental Evolution,
Cold Spring Harbor, N. Y.*]

This report presents the training records of the children and grandchildren of a pair of rats heavily alcoholized daily for more than two months before the birth of the young. These alcoholized rats came from the same litter; another pair from this same litter was chosen on the basis of equal weight as the parents of the normal controls. All matings were between sibs in the same litter. Habit formation was tested by training on a Watson maze and the Yerkes multiple choice apparatus. The results of the maze training have been calculated on the basis of the last twelve trials of the training proper as well as twelve memory

trials given a month later. The criteria used are: average time per trial, number of "perfect" trials, number of wrong turns, or errors. Problems known as "first door to the left" and "first door to the right," with tests, were used on the multiple choice apparatus; the results are based upon the number of correct first choices, and the number of wrong choices.

It is obvious from the figures in the following tables that the rats that received alcohol and their unalcoholized descendants were less successful than the controls in meeting the situations presented.

TABLE I.
MAZE PROBLEM.

	Alcoholized.	Normal.	Parents.		Grandparents.	
			Alcoholized.	Normal.	Alcoholized.	Normal.
<i>Training.</i>						
Av. time per trial	29.00	18.05	16.80	11.61	19.05	9.64
Av. no. "perfect" trials	1.	4.	1.25	4.33	.41	5.50
Av. no. errors	2.56	1.44	2.47	1.01	2.84	.62
<i>Memory.</i>						
Av. time per trial			15.24	11.51	14.55	24.00*
Av. no. "perfect" trials			2.75	5.66	2.16	5.41
Av. no. errors			1.78	.91	1.71	1.19
Number of rats	3	3	6	6	5	5

* Due to one trial when one rat seemed sickly.

TABLE II.
MULTIPLE CHOICE APPARATUS.

Problem.	Correct First Choices.			
	Parents Alcoholized.	Normal.	Grandparents Alcoholized.	Normal.
I.	4.21	4.91	3.88	6.12
I. (test)	5.75	6.05	5.58	6.70
II.	3.35	3.43	4.03	3.71
II. (test)	3.67	4.30	3.33	3.75
	Wrong Choices.			
I.	11.33	9.87	12.45	7.65
I. (test)	7.98	6.65	7.25	5.95
II.	17.32	15.53	14.47	13.05
II. (test)	13.97	10.67	13.83	13.00