A COMPARATIVE STUDY OF THE LEARNING OF FOUR
MACACA NEMESTRINA MONKEYS 1)

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(With 2 figures)

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INTRODUCTION

Observation of animals has long ago convinced man that, like himself, members of the same species differ from one another in their mental capacities, but until recently the evidence offered for this has been mainly anecdotal. However, developments in training techniques for monkeys, especially in America, have now made it possible to test the mental variations in these animals. For instance, HARLOW and SETTLAGE (1947) have compared the learning scores of brain damaged and normal Macaca mulatta monkeys, and HARLOW (1945) the facility with which this same species learns various types of discrimination. But, in spite of a very considerable literature on monkey learning, studies dealing with the relative capacities of normal monkeys of the same species and approximately the same age are far from common and are almost entirely confined to the Macaca mulatta.

For this reason it seemed worth while to make a comparative study of the rates of learning of four pre-adult Macaca nemestrina monkeys, using two series of tests, each consisting of four subtests, and noting at the same time various phenomena relative to learning, which appeared in all or any of the group.

We are fully aware that the value of this study would have been enhanced if the number of subjects had been greater, but limitations imposed by finance, space and other demands on supplies made this impossible.

SUBJECTS

In our experiment we used four male, pre-adult Macaca nemestrina monkeys, named Cleon, Crito, Nestor and Plato, weighing respectively 3.7 kg., 3.5 kg., 6.5 kg. and 4 kg. These animals arrived in this country by 1) The author wishes to express his thanks to Mr J. AUSTIN whose care of the monkeys has contributed so much to their well-being and friendliness, and to Mr A. AUSTIN for photography.
air from Singapore and were therefore presumably without any experience of laboratory tests. They were allowed several weeks to settle in their new surroundings, during which period we and they became familiar with each other, and they no longer showed fear at our approach and came readily to take food from our hand inside their cages.

APPARATUS

A Kluver type black form board, 38 × 9½ cm. with two bait wells, was used in the tests, with eight white stimulus objects, divided into two sets of two pairs. The first set was a cross and triangle and for the second pair a large and a small rectangle. The second set was a star with diamond and a large and small circle (Fig. 1).

The training cage used had one side consisting of a metal sheet, in the centre of which was a box on the outside. In this box was placed the form board; a metal shutter screened this from the monkey while one well was baited and both were covered by a stimulus object, but it was later raised for the monkey to make his choice (Fig. 2).

PROCEDURE

The monkeys were first thoroughly accustomed to the training cage and the lifting of the shutter. They were then taught to use the form board, two identical white squares being used as stimulus objects, placed over the two wells in the form board. The monkey moved one or other of these aside and so obtained the bait, a piece of apple or carrot placed in one or other well in a random order. This period of pre-training usually lasted ten to fourteen days.

As soon as the monkey was familiar with the apparatus and using it freely the experiment was begun. The four stimulus objects in the first set, i.e., cross, triangle, large rectangle and small rectangle, were divided into four pairs for four tests in the following way:

1. cross and triangle (a form discrimination)
2. large and small rectangle (a size discrimination)
3. the two negative stimuli of the previous pairs (a second form discrimination)
4. the same pair as in test 3, but the previously negative stimulus now made positive, making this test one of reversal learning.

The second set of four stimulus objects was treated in a similar manner so as to form a second series of four tests comparable with the first.

At the beginning of the first three tests in each series the monkey was offered, by the raising of the shutter, the choice of the two stimulus objects,