COMPARATIVE ETHOLOGY OF THE CICONIIDAE.
PART 1. THE MARABOU STORK, LEPTOPTILOS CRUMENIFERUS (LESSON)

by

M. P. KAHL1)
(Dept. of Zoology, Makerere College, Kampala, Uganda).

(With 28 Figures and Plates)
(Rec. 8-XI-1965)

CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>77</td>
</tr>
<tr>
<td>Methods</td>
<td>77</td>
</tr>
<tr>
<td>Description</td>
<td>78</td>
</tr>
<tr>
<td>Behavior of adults</td>
<td></td>
</tr>
<tr>
<td>Locomotion</td>
<td>80</td>
</tr>
<tr>
<td>Feeding behavior</td>
<td>80</td>
</tr>
<tr>
<td>Comfort movements</td>
<td>81</td>
</tr>
<tr>
<td>Social displays away from nest</td>
<td>83</td>
</tr>
<tr>
<td>Social displays at the nest</td>
<td>86</td>
</tr>
<tr>
<td>Displays primarily hostile</td>
<td>88</td>
</tr>
<tr>
<td>Displays primarily sexual</td>
<td>89</td>
</tr>
<tr>
<td>Behavior of young</td>
<td>92</td>
</tr>
<tr>
<td>Locomotion</td>
<td>96</td>
</tr>
<tr>
<td>Feeding behavior</td>
<td>96</td>
</tr>
<tr>
<td>Comfort movements</td>
<td>97</td>
</tr>
<tr>
<td>Social displays of nestlings</td>
<td>98</td>
</tr>
<tr>
<td>Displays toward parents</td>
<td>98</td>
</tr>
<tr>
<td>Displays toward other individuals</td>
<td>100</td>
</tr>
<tr>
<td>Discussion</td>
<td>101</td>
</tr>
<tr>
<td>Summary</td>
<td>104</td>
</tr>
<tr>
<td>Literature</td>
<td>105</td>
</tr>
<tr>
<td>Zusammenfassung</td>
<td>106</td>
</tr>
</tbody>
</table>

1) This study was conducted during the tenure of a U.S. National Science Foundation Post-doctoral Fellowship. Additional financial aid was received from Sigma Xi-RESA and the Chapman Fund, American Museum of Natural History. I am grateful to Makerere College for making their facilities available to me. I would also like to thank the following persons for assistance in the field and for comments on the manuscript: L. H. BROWN, M. E. W. NORTH, D. F. OWEN, and J. G. WILLIAMS. The German summary was prepared by KLAUS IMMELMANN, and my wife, DORIS, assisted with the preparation of the manuscript.
INTRODUCTION

The avian family Ciconiidae, the storks, contains relatively few living members. Only 17 species of 11 genera are currently recognized (Peters, 1931). A family with so few members is well suited for study from the point of view of comparative behavior because it is possible for one worker to study a large percentage of the species within a reasonable period of time. Such an approach lends itself to the analysis of evolutionary trends in innate behavior within the group, and, thereby, is a potential contribution to our understanding of some of the underlying principles of animal behavior.

The majority of storks are found in the tropics, with the largest sympatric number being found in tropical Africa. The Marabou Stork, *Leptoptilos crumeniferus*, is one of the commonest of the African storks; it is widely distributed from the southern border of the Sahara (approximately 15° N. latitude) south to northern South Africa (approximately 25° S. latitude). The Marabou is particularly abundant in East Africa, where the present study was conducted. Because of its availability and the ease with which it could be studied intensively, the Marabou was chosen as a “model stork”, with which the behavior patterns of the other species will later be compared. With the exception of Schneider’s (1952) study of the genus *Leptoptilos* in captivity, very little detailed information has previously been published on the behavior of the Marabou; some aspects of its reproductive biology are treated in Kahl (in press).

METHODS

Over 3500 nest-hours of observations were made of Marabous at a breeding colony near Kitale, Kenya, East Africa, during the periods January 1964 and October 1964 through May 1965.

The nesting colony, which contained up to 15 active nests, was located in the flat crown of an acacia tree approximately 10 m high. Nesting birds were observed from a nearby tower, the top of which was slightly above the level of the nests and about 12 m distant. No concealment was necessary, for the birds were quite tame and were undisturbed by the presence of observers in the tower.

Behavior was observed with 7-power binoculars and a 15-power telescope, as well as with the unaided eye. Observations were dictated into a small portable tape-recorder and later transcribed into a permanent notebook. Displays were photographed with 35 mm still and 16 mm motion-picture cameras, and vocalizations were recorded with an E.M.I. portable tape-recorder (Model RE-321). These photographs and recordings were available