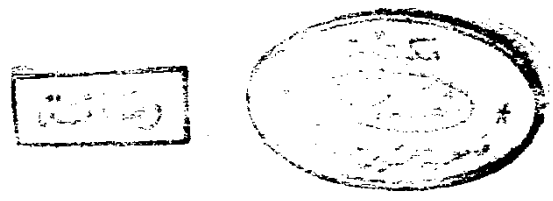
STUDIES ON BIONOMICS OF CULICINE MOSQUIOES IN SHARQUIA GOVERNORATE

A Thesis

Submitted in Partial Fulfilment of The Requirements For The Award of The Degree of Master of Science



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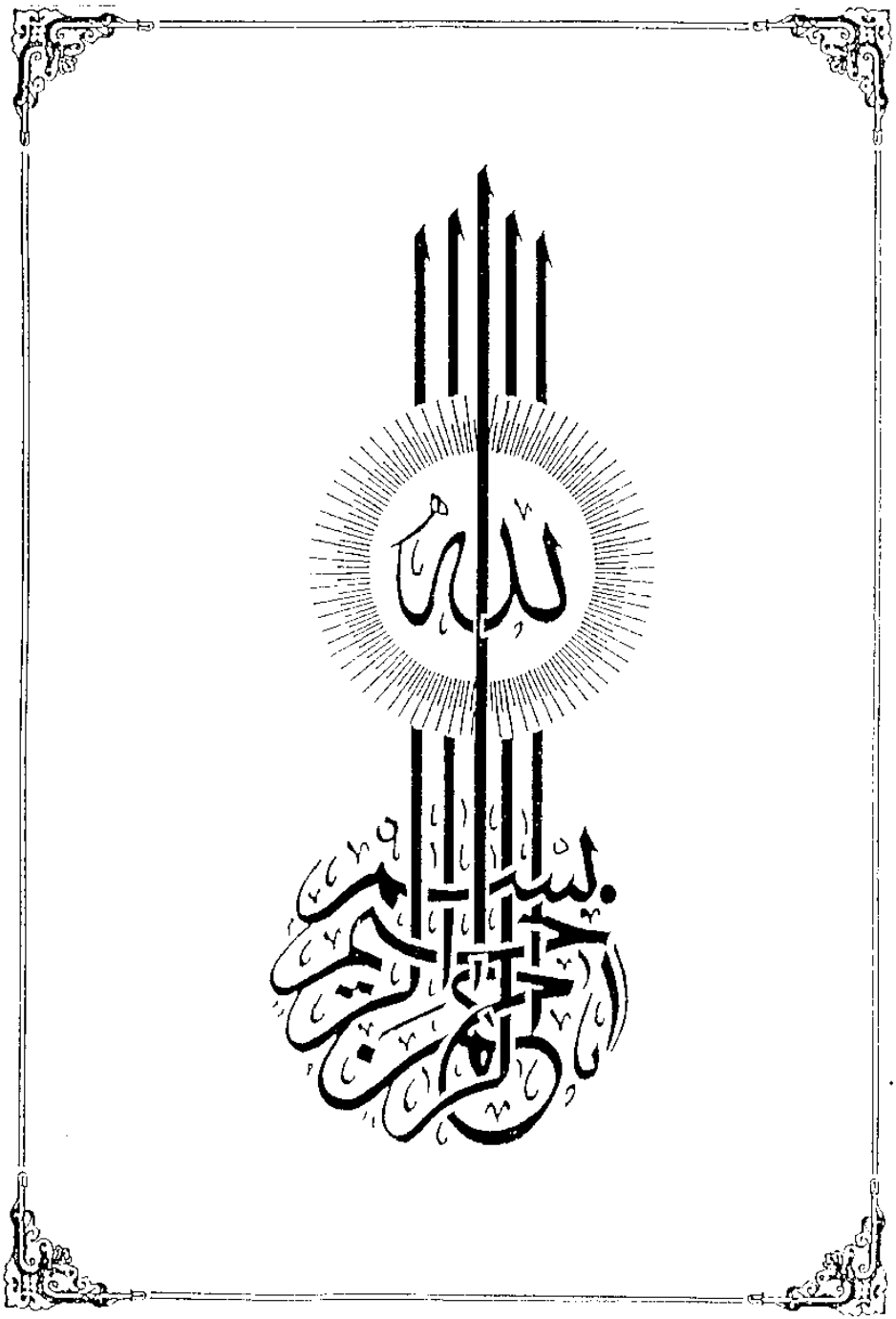

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I- INTRODUCTION

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Control strategies for mosquito-borne diseases depend upon identifying the mosquito population transmitting the pathogen. Such identification depends upon estimating vectorial capacity and bionomics of candidate mosquito populations which are estimated through several entomological parameters.

The Sharqiya Governorate has always been a suitable and preferable mosquito breeding area and therefore was attacked by several mosquito born diseases such as malaria and filariasis.

Recently during October 1977, an epidemic of an acute febrile illness and fatal haemorrhagic disease was reported from villages and millitary camps in the Inshas area of Sharqiya Governorate, 70 km north-east of Cairo. The disease was identified as the Rift Valley Fever (R V F).

Culex pipiens has been incriminated as the vector of R V F virus in Egypt (Hoogstraal, et.al, 1979). In addition, mosquito species, which have been suspected as possible carrier of R V F virus were collected during the 1977-1978 epidemic from different field localities. Cx. antennatus has also been caught during the R V F outbreak in the Nile Delta in 1977 (Meegan, et.al, 1980).

Since Sharqiya Governorate was the first area where R V F was recorded and its vectors were identified or

suspected, therefore the objective of this study was to determine the distribution and bionomics of common Culicine mosquitoes in Sharqiya Governorate and to relate these findings to their probable role in the epidemiology of such viral disease.

Aim of the Present Study :

The present study was designed to investigate the Culicine mosquito fauna in one of the villages in Sharqiya Governorate and to study in details the bionomics of these culicine species. The culicine mosquitoes were incriminated as the main vectors of the R.V.F. virus which invaded Sharqiya Governorate during 1978-1979, therefore the present study was directed towards the study of :

1. Larval density.
2. Adult density and seasonal abundance.
3. Feeding and resting habits.
4. Biting activity.
5. Study the parity rates of resting and biting culicine mosquito species.
6. Determination of the gonotrophic cycle.

II- LITERATURE REVIEW

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1. The Egyptian Culicine Mosquitoes

The first complete survey and description of Egyptian Culicine mosquitoes was carried out by Kirkpatrick (1925). He recorded Culex pusillus (Macquart), Culex pluviolis (Kirkpatrick), Culex perexiguus (Theobald), Culex sinaiticus (Kirkpatrick), Culex laurenti (Newstead), Culex pipiens (Linnaeus). Regarding other genera, he recorded, 6 Anophelines and 3 Aedine species namely, Aedes caspius (Pallas), Ae. detritus (Haliday) and Ae. argenteus (Poiret). He also recorded one species from each genus of Uranotaenia and Theobaldia (Culiseta) namely Uranotaenia unguiculata (Edwards), and Culiseta longiareolata (Macquart).

The second detailed study of Egyptian culicine was reported by Gad (1955), who depended in his survey on the samples collected from the malaria stations, which was mainly coincident with search of anopheline breeding places. He mentioned the presence of only seven culicine species, giving some of them their correct specific name such as Culex antennatus (Becker), for Culex laurenti (Newstead), Culex univittatus (Theobald), for Culex perexiguus (Theobald), Culex theileri (Theobald), for Culex tipuliformis (Theobald), Culex poicilipes (Theobald), for Culex quasigelidus (Theobald), in addition to Culex pipiens (Linnaeus) and Culex pusillus (Macquart).

The same author (Gad 1955), also noted that the presence of Aedes argenteus was only restricted to the canal zone, thus differing in distribution from Kirkpatrick Survey (1925). As regards genus Uranotaenia only one species was reported by Kirkpatrick (1925) and Gad (1955), viz. Uranotaenia unguiculata, Edwards. Regarding genus Theobaldia, (Culiseta) only one species viz, Theobaldia longiareolate (macquart) was mentioned by both authors.

Hurlbut and Weitz (1956) carried out a survey using light traps and commented that Cx. pipiens (Linnaeus) Cx. antennatus (Becker), and Cx. univittatus (Theobald), were among five most common mosquitoes in the Nile-Delta.

Wassif (1969) carried out a survey over a period of two years for the Egyptian Culicine mosquitoes in the Nile Delta. He reported the presence of ten Culicine species: Culex pipiens (Linnaeus, 1758), Cx. antennatus (Becker, 1903), Cx. univittatus (Theobold, 1903), Cx. theileri (Theobald, 1903), Aedes caspius (Pallas, 1771), Aedes deteritus, (Haliday, 1883), Theobaldia longiareolata (Maquart, 1908), and Uranotaenia unguiculata (Edwards,1913).

Khalil (1981), in a preliminary survey of mosquitoes in upper Egypt (from Qena to Aswan) found that Cx. pipiens was the most common mosquito species there and that quinque-fasciatus was not present in these localities.