LOCOMOTOR ACTIVITY RHYTHM IN
THELYPHONUS SEPIARIS
Owing to the relatively sporadic availability of Thelyphonus sp. detailed studies on the activity rhythms could not be undertaken and the following account deals with only the diurnal rhythm of locomotor activity. In view of the total lack of knowledge regarding the diurnal rhythms of activity in this arachnid, even the preliminary studies reported below are considered valuable. The locomotory activity was recorded just as in the case of the scorpion, under normal day and night conditions and in continuous darkness and constant temperature for about fifteen days in the former case and ten days in the latter conditions. The records obtained are analysed and the activity is represented in the graph against the time of the day.

RESULTS AND DISCUSSION

The diurnal rhythm of locomotor activity in Thelyphonus sepiaris under normal day and night conditions (Plate IX, Figs. 45 to 48) exhibit a number of similarities with that of the scorpion, Heterometrus fulvipes. These are also nocturnal creatures with the activity confined to the first half of the night period. The onset of activity appears by about 6.00 P.M. coinciding with the light to dark transition and continues upto about 12 midnight. With a single period of activity Thelyphonus sepiaris is truly monophasic as the other arachnids such as the scorpions, Buthotus minax, Leiurus quinquestriatus, Pandinus exitialis (Cloudsley-
PLATE IX

Legends for the figures 41 - 48

Figs. 41-44: Analysis of actograph records of locomotor activity in Thelyphonus sepiaris under continuous darkness and constant temperature (30°C ± 1°C).

Vertical scale on the left represents the number of flicks per hour and the dates on the right represent the days on which the recordings were made. Zero hour represents mid-night.

Figs. 45-48: Locomotor activity rhythm under natural day-night conditions.

Other details as above.
PLATE IX

Fig 41

Fig 42

Fig 43

Fig 44

Fig 45

Fig 46

Fig 47

Fig 48

TIME OF DAY (HOURS)
Thompson, 1963a) and *Heterometrus fulvipes* (present study), the spider, Ciniflo and the camel spider, Galeodes arabs (Cloudsley-Thompson, 1957, 1961a). The period of the locomotor activity rhythm is nearly 24 hours and the onset of activity is synchronized with the light to dark transition and changes in the other external factors associated with the setting in of night. A clear rhythm of locomotor activity sharing a number of common features with that of the scorpion, *Heterometrus fulvipes*, is thus demonstrated in Thelyphonus sepiaris also.

When this whip scorpion, *T. sepiaris* is subjected to continuous darkness and constant temperature (Figs. 41 to 44) the rhythm of locomotor activity is seen to persist for more than 10 days suggesting that it is endogenous. The pattern of the rhythm is not much different from what is observed under natural conditions (i.e., under normal day and night conditions) but the significant observation that could be noted in these experiments is the daily shift in the onset of locomotor activity. The shift is of the magnitude of about an hour or two as evidenced by at least two instances (Figs. 42 and 44) indicating the circadian nature of the rhythm. This particular feature adds further evidence to the endogenous nature of the rhythm indicating that it is inherited but is modulated by the extraneous cyclical variations.

Unlike in the case of the scorpion, *Heterometrus fulvipes*, the period of the locomotory rhythm is not shorter than 24-hours but longer.