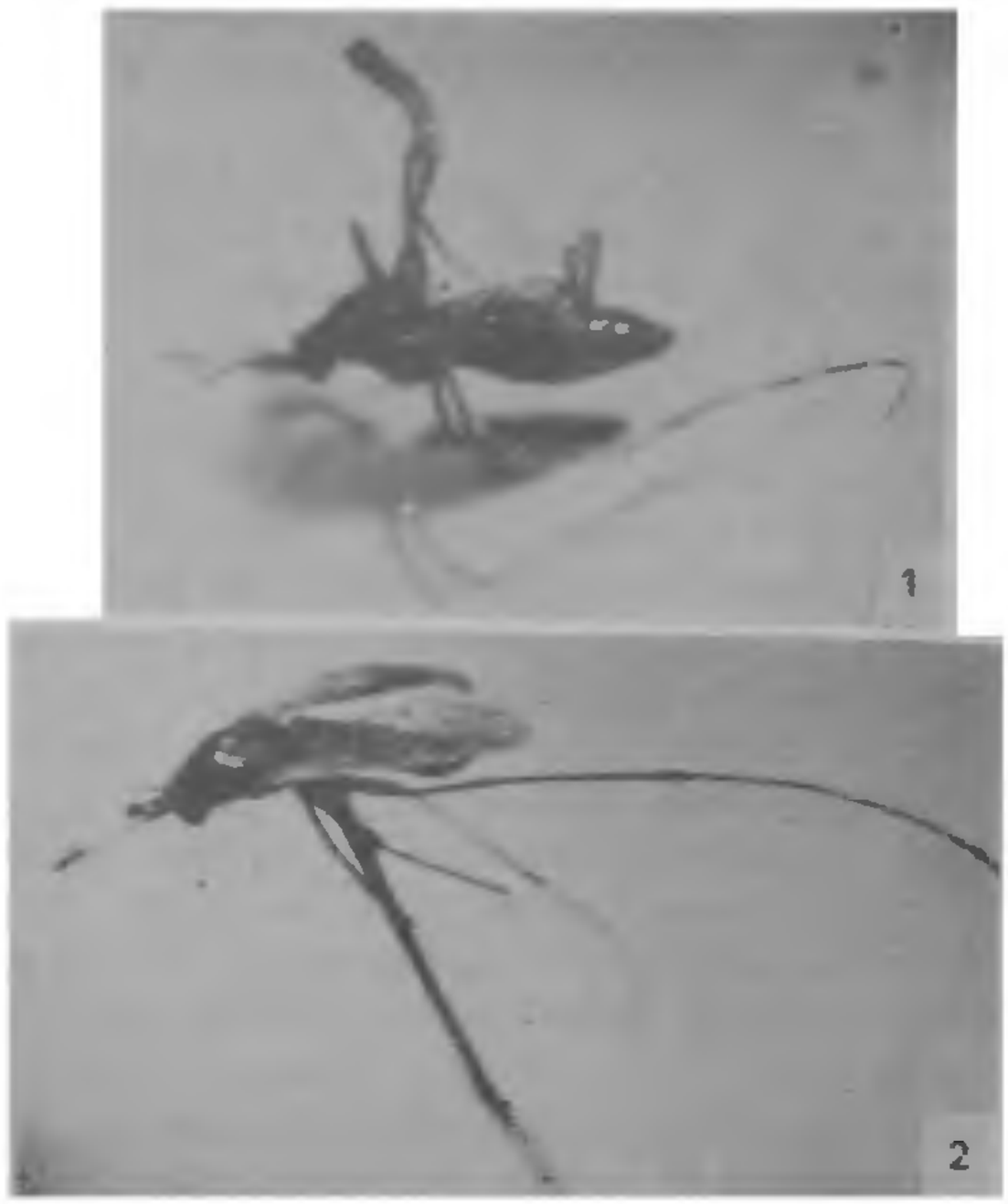

Figures 1 and 2. **1.** Bilateral curly wing mutant: note the abnormally curved hind tarsae; **2.** Unilateral curly wing mutant.

hopping movements. In contrast to the first mutant, this female mated with freshly emerged normal males in the test tube and took a complete blood meal when held on the human hand. After oviposition, she readily fed again on the human hand and laid another cluster of eggs. The clusters were diamond-shaped and not spherical with only 77 eggs in the former and 72 in the latter. Four days after the second oviposition, the mutant mosquito died. From the first egg cluster, 84.4% of larvae hatched and all were dead after a day. Of the total larvae hatched (82.5%) from the second egg cluster, 3 adult females emerged, all of which were normal as far as their wings and legs were concerned. Attempts to rear F_2 and successive generations failed due to 100% mortality of the first instar larvae hatched from the eggs of these females (F_1). An intensive study on the genetics of curly wing mutant is being carried out in this laboratory.

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ECOLOGICAL AFFINITY OF THE ZOOPLANKTON POPULATIONS IN THEIR NATURAL ENVIRONMENT

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ZOOPLANKTON constitutes the major component of aquatic food chain; information on their population dynamics is of paramount importance in applied fisheries. The percentage co-occurrence and the correlation matrix of the different zooplankton could be used as an indicator of their ecological affinity (*vide infra*).

Samples of zooplankton were collected from a freshwater tank, Jyotisar of Kurukshetra during March 1977-June 1979 to study their frequency at different times of the year[1]. Forty samples were collected during the investigation. The percentage co-occurrence (PC) of the different zooplankton species was worked out using the formula[2]: $PC = c/(a+b-c) \times 100$, where c is the number of samples containing both the species, a and b are the number of samples containing individual species. The correlation matrix was worked out using standard methods[3].

Three species of cladocerans (*Ceriodaphnia cornuta*, *Diphanosoma excisum*, *Daphnia lumholtzi*), 2 species of copepods (*Neodiaptomus kamakhiae*, *Cyclops sp*), 1 species of rotifer (*Brachionus calyciflorus*) were observed to be the dominant forms in the tank. As evident from table 1, the highest percentage co-occurrence (PC) was observed in *C. cornuta* and *D. excisum* indicating the closest ecological affinity between these two species. The lowest PC in *D. excisum* and *D. lumholtz* elicits the existence of least affinity between these two forms. The lowest values of PC in different rows of table 1 point out that *D. lumholtzi* appeared least often with the other forms

Table 1 *The percentage co-occurrences and correlation matrices of the zooplankton populations in Jyotisar tank of Kurukshetra*

	D. excisum	*C. cornuta*	*D. lumholtzi*	*N. kamakhiae*	*Cyclops sp*	*B. calyciflorus*
D. excisum	(×)	90	15	75	69	73
C. cornuta	0.65*	(×)	23	79	77	80
D. lumholtzi	−0.55*	−0.44*	(×)	30	46	37
N. kamakhiae	0.55*	0.54*	−0.43*	(×)	77	79
Cyclops sp	0.38*	0.50*	−0.41*	0.25	(×)	79
B. calyciflorus	0.45*	0.21	−0.32*	0.48*	0.45*	(×)

*$P < 0.05$.

Note: The values on the right and left side of (×) represent percentage co-occurrence and correlation matrix, respectively.

of zooplankton. The inferences drawn by the percentage co-occurrence (*vide supra*) also get support from the correlation matrix (*vide infra*) as it gives a measure of relationship between the numerical changes in two species. The most significant and positive correlation was observed between *C. cornuta* and *D. excisum* whereas the most negative correlation was noted between *D. excisum* and *D. lumholtzi*. *D. lumholtzi* also exhibited significant and negative correlations with all the other forms of zooplankton.

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WEIGHT AND CALCIUM CONTENT OF EGG SHELL IN RELATION TO AGE OF POULTRY FOWL

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THIN egg shells in poultry results from lack of calcium or inadequate supply of vitamin D[1]. Also, fatiguing a long period of continuous egg laying results in thinning of shell[2]. Calcification of egg shells in relation to age is reported in this paper.

Eggs were collected from 19-week-old Leghorn birds and collection continued (from the same group of birds) for the following 47 weeks. Calcium content in each egg shell was determined following standard techniques[3,4]. For convenience, values from eggs collected in 4 continuous weeks were put in a single group and mean was calculated. Thus 12 groups (A, B, C, . . . L) were formed.

Mean shell weight (MSW) and calcium content (MCC) (table 1) observed in the present study agree favourably with values recorded earlier[5,6]. MSW and MCC recorded from groups E and F were significantly higher than the values from other groups. MSW gradually increased from A to E, then decreased gradually to the lowest level in L. A similar trend was found regarding MCC. These indicated that the ability of birds to secrete egg shell declines

Table 1 *Weight and calcium content of egg shells (mean ± SD) from birds of different age groups*

Group	Age in weeks	Shell weight (g)	Calcium content/ shell (g)
A	19–22	4.13 ± 0.06	2.0 ± 0.19*
B	23–26	4.89 ± 0.18	2.1 ± 0.09
C	27–30	4.41 ± 0.06*	2.3 ± 0.03*
D	31–34	4.63 ± 0.08*	2.4 ± 0.08
E	35–38	4.99 ± 0.07	2.6 ± 0.01
F	39–42	4.95 ± 0.14	2.9 ± 0.21
G	43–46	4.72 ± 0.11	2.5 ± 0.06
H	47–50	4.63 ± 0.11*	2.4 ± 0.26
I	51–54	**4.60 ± 0.05	**2.3 ± 0.03*
J	55–58	4.41 ± 0.06	2.3 ± 0.15
K	59–62	3.89 ± 0.20	1.9 ± 0.10
L	63–66	3.75 ± 0.01	1.7 ± 0.04
Correlation coefficient between weight and calcium content of egg shell		$r = 0.967$	

Each value is an average of 40 samples.
*Significantly differ from E and F; **Significantly differ from K.