

NOTES ON SOME TROPIC REACTIONS OF MACRO-DACTYLUS SUBSPINOSUS FAB.

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During the summer of 1914, while investigating a "rose chafer" complaint in southern New Jersey, a long wait for a train, an abundance of beetles and favourable surroundings tempted me to test the action of this insect in the field under different conditions of light and temperature.

A comparatively cool, shady woods, where the temperature was 75 degrees F., a tree in the open under the shade of which the temperature was 84 degrees F. and a dead leafless tree in the bright sunlight where the temperature was 89 degrees F., constituted all the apparatus at my disposal. Forty-five beetles were collected while feeding and copulating and three batches of fifteen each were liberated one at a time at the base of a tree in each of the surroundings described above. The following table gives the distances (vertical) covered by each beetle.

Shade, Temp. 75 F.		Shade, Temp. 84 F.		Sunlight, Temp. 89 F.	
Beetle	Distance covered	Beetle	Distance covered	Beetle	Distance covered
1.....	0 ft. 2 in.	1.....	0 ft. 2 in.	1.....	1 ft. 0 in.
2.....	6 " 0 "	2.....	0 " 4 "	2.....	0 " 11 "
3.....	3 " 0 "	3.....	0 " 6 "	3.....	0 " 3 "
4.....	1 " 6 "	4.....	0 " 1 "	4.....	0 " 10 "
5.....	5 " 0 "	5.....	0 " 2 "	5.....	1 " 0 "
6.....	1 " 0 "	6.....	0 " 5 "	6.....	0 " 2 "
7.....	0 " 8 "	7.....	0 " 2 "	7.....	0 " 6 "
8.....	2 " 0 "	8.....	0 " 3 "	8.....	0 " 4 "
9.....	1 " 0 "	9.....	0 " 4 "	9.....	0 " 6 "
10.....	0 " 6 "	10.....	4 " 0 "	10.....	0 " 2 "
11.....	1 " 0 "	11.....	0 " 3 "	11.....	0 " 8 "
12.....	0 " 6 "	12.....	0 " 4 "	12.....	0 " 2 "
13.....	0 " 4 "	13.....	0 " 3 "	13.....	0 " 3 "
14.....	0 " 6 "	14.....	0 " 1 "	14.....	0 " 2 "
15.....	2 " 0 "	15.....	0 " 6 "	15.....	0 " 4 "
Totals.....	22 ft. 38 in.	Totals.....	4 ft. 46 in.	Totals.....	2 ft. 63 in.
Averages.....	20.1 "	Averages.....	6.2 "	Averages.....	5.8 "

At a shade temperature of 75 degrees F., the average distance covered was 20.1 inches. At a shade temperature of 84 degrees F., the average distance was 6.2 inches, and in the sunlight, with the temperature five degrees higher, the average distance was 5.8 inches. It thus appears that thermotropism and phototropism either together or alone were responsible for the quicker escape of the insects into the air and the lessened distances covered.

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