

FLIGHT ENERGETICS OF GYPSY MOTHS AND TENT  
CATERPILLARS—SIMILAR MASS BUT DIFFERENT  
SHAPES. Timothy M. Casey, Dept. of Physiol.  
Rutgers Univ., New Brunswick, N.J.

The gypsy moth (Lymantria dispar,  
Lymantriidae) and the adult eastern tent  
caterpillar (Malacosoma americanum, Lasio-  
campidae) are similar in body mass (about  
100 mg) but the former is slender with  
large wings while the latter is compact  
with small wings. Thoracic temperature  
( $T_{Th}$ ) in the tent caterpillar is 34-40°C  
at air temperatures between 10 and 30°C  
while in the gypsy moth,  $T_{Th}$  is about 7°C  
above air temperature ( $T_A$ ) at all  $T_A$ 's  
between 15 and 32°C. In both species  
oxygen consumption was independent of  $T_A$   
with that of the tent caterpillar being  
2.6 times greater than that of the gypsy  
moth. Wing beat frequencies of M. ameri-  
canum were about twice as great as those  
of the gypsy moth. Thoracic conductance  
of the two species were not significantly  
different. Differences in energetic and  
thermoregulatory capacity during flight  
by the two species are due to different  
magnitudes of heat production resulting  
from different wing morphology which  
determines the aerodynamic power output  
and therefore the power input (metabolic  
rate).